The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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The Baldwin Grass Catcher.

The use of lawn mowers has now become general and is acknowledged to be a necessity, not only as a valuable time-saving machine, but because it is imposible to keep the lawn in a proper condition and give it a handsome appearance without one. The question of how to get rid of the cut grass or clippings has of late been an important matter. The use of a common rake will dig up the roots of the grass, and a sweeper of any kind brushes up the roots in an injurious way, yet an accumulation of grass around the roots is a great obstacle in securing a handsome velvety lawn. Although grass boxes have been considered essential in Great Britain for many years to secure the best growth and greatest beauty of lawn, yet the fact of their being a heavy and unwieldly attachment has hitherto prevented their being popular in this country. The Baldwin Grass Catcher which we illustrate overcomes these objections. It consists simply of a frame made of wire rods, with wire cross-rods, covered with sail duck cloth. It has no connection with the handle, but the iron rods are attached to the axle resting securely on the lower part of the frame of the mower, as seen in Fig. 1. The weight of a

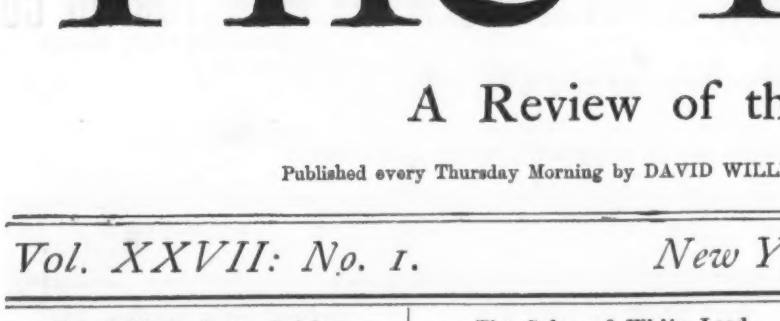


Fig. 1.—The Catcher Attached to Lawn Mower.

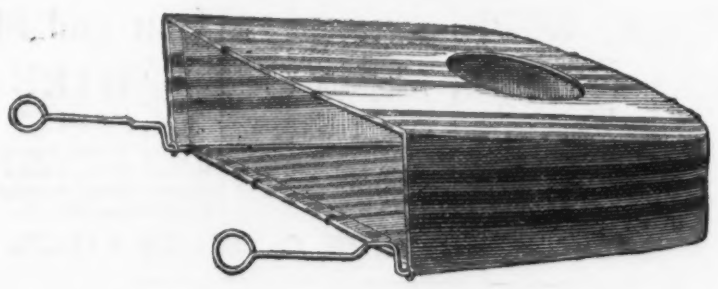


Fig. 2.—The Catcher Unattached.

THE BALDWIN GRASS CATCHER.

catcher of ordinary size is less than four pounds, and does not retard the working of the mower. It is easily emptied, either by taking the grass from an opening in the catcher or by raising the handle and reversing the mower, when the grass can be emptied in a pile on any particular spot on the lawn. It can, of course, only be used by those machines which throw the cut grass backward, and is particularly adapted to the Pennsylvania lawn mower, the manufacturers of which, Messrs. Lloyd, Supplee & Walton, of Philadelphia, and their agents in this city, Messrs. Durrie & McCarty, control the production and sale.

The Calladay Scroll Saw.

In the accompanying engraving we illustrate a scroll saw of recent design, manufactured by Messrs. Jos. O. Calladay & Co., of Philadelphia. With a view of making the machine as substantial as possible, the manufacturers build it entirely of iron and steel, with the exception of the table top, which is made of narrow strips of hard maple and walnut. As will be seen, it is mounted on a heavy pedestal. The journal shaft below the table is steel, and runs in Babbitt metal boxes of ample size. The driving pulley, which makes from 800 to 1000 revolutions per minute, is 6 inches in diameter, and has a 2½-inch face, upon which also the brake is made to operate. Both the brake and the pulley shifter are moved by the foot. The cross heads and the ways are made of steel and gun metal, while the springs are steel. The tension of the latter can be evenly graduated by turning a screw acting upon their lower end.

The Color of White Lead.

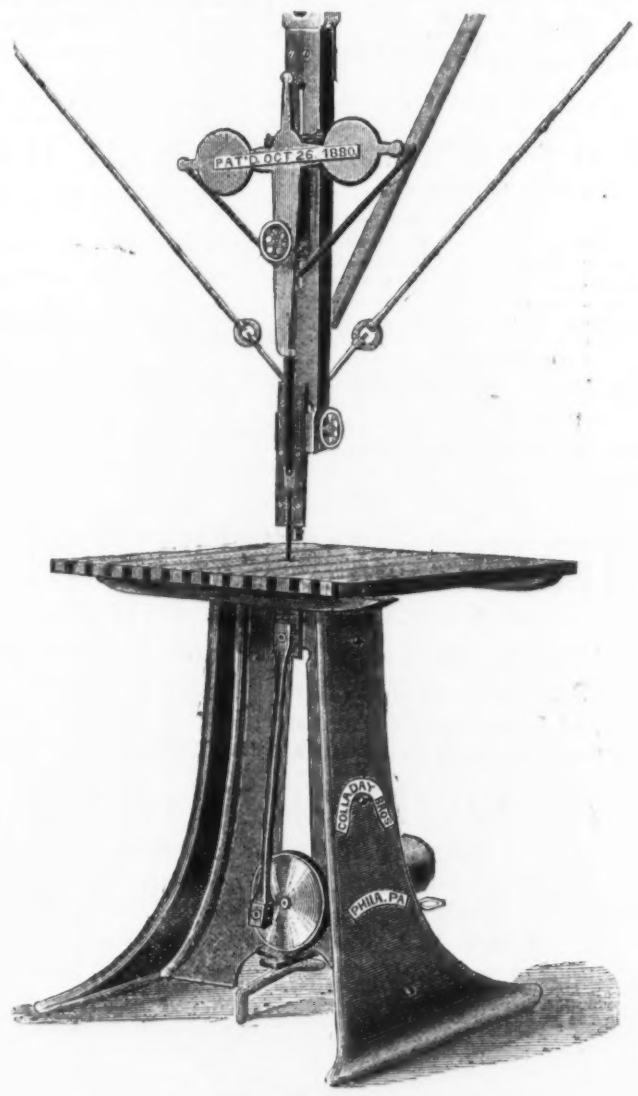
There is probably no pigment the color of which is so sensitive as that of white lead. The chemical reactions taking place during its manufacture are, in a certain sense, so complicated, and are, in the methods used, so imperfectly under the control of the manufacturer, that it is difficult to trace the causes leading to the production of white lead having a reddish, grayish or yellowish tinge. It has been the custom of white-lead manufacturers to attribute failures to obtain a pure color more to quality of the raw material used and less to the irregularities in manufacture than the facts would appear to warrant. Both producers and users of lead have a strong interest in having the causes leading to the production of impure shades brought to light, because the difference in price between common and refined brands of lead ranges between $4 and $6 per ton. A growing proportion of our domestic lead is obtained from the base bullion produced from impure argentiferous ores of the Rocky Mountains. While some of the works which extract the silver from the raw lead there produced have succeeded, by close attention to refining, in making a metal pronounced excellent for white-lead purposes—notably the St. Louis and Pittsburgh works—others are still forced to market their lead at lower rates. There are other questions, too, worth while considering. After the extraction of the silver by means of zinc, a small percentage—½ to ¾ of 1 per cent.—of zinc remains in the lead, which is otherwise pure. In order to remove this, the lead must go through a refining process. If it could be shown that this lead containing zinc would be as fit for the purposes of the corroder as the softened metal, the entire expense and losses of the refining process could be saved. Whether it would offer any advantages would be a matter to be decided by the corroders.

The main question, however, remains—whether and in what degree impurities in the lead affect the quality of the white lead produced from the metal, and whether the raw material is properly chargeable with the defects of the product. While there are indications amounting almost to proof that certain quantities of certain impurities have a bad effect, there can be little doubt that negligence or accidents in the manufacture are more to blame than is generally believed. In order to give an idea of the difficulty experienced in tracing the effect of impurities by reason of the high degree of purity of good brands of metal, we may quote the following analyses, made by Prof. Williams, of Rolla, Mo.; Prof. Wuth, of Pittsburgh; Prof. Hampe, of Clausthal, Germany, and others. From these analyses it will be seen that in good lead the total quantity, six or more impurities together, does not reach one-tenth of one per cent., and is sometimes even below one-half of that amount. The difficulties of tracing and defining the limits of the quantity of any one of them admissible, are therefore considerable:

Ingredients.	Arsenic, per cent.	Antimony, "	Silver, "	Copper, "	Iron, "	Zinc, "	Nickel, "
Granby, Mo.	0.0164o	0.00077	0.00029	0.01210	0.01711	0.00066	trace
St. Joe, Mo.	0.00183	0.00675	0.00405	0.06394	0.00137	0.00082	trace
Mine La Motte, Mo.	0.00034	0.00119	0.00345	0.01999	0.00248	0.00164	0.00095
"Rozier," Vallé Hearth.	0.00825	0.00184	0.00615	0.03742	0.02497	0.00118	none
Pittsburgh, Pa.	.....	0.00051	0.00042	0.00307	trace	0.00038	.....
Clausthal, Germany.	0.00019	0.00198	0.00045	0.00479	0.00320	0.00142	0.00047
Unwashed White Lead from Clausthal Lead.	.....	0.00076	0.00034	0.00256	0.00085	0.00025	0.00007

Some interesting data bearing on the questions involved were some years ago published in pamphlet form by Herr E. Landsberg, an eminent German metallurgist, of the Stolberg works. Experiments made at Stolberg prove that lead holding 0.5 per cent. of zinc furnishes white lead of standard purity. In all the analyses given the quantity is far below that limit, which in fact represents the saturation of lead with zinc at low temperatures. Antimony has been proved by Dr. Hampe to have no injurious effect. That prominent specialist took Tarnowitz lead holding 0.0013 of antimony, and by additions raised its percentage to 0.0492 per cent. Both metals were corroded, and no appreciative difference was noted in the quality of the product of both. Copper has always been regarded with much suspicion, but the analyses of leading English brands of lead, which are reported to be good for corroding purposes, dispel much of the danger. Percy quotes analyses of best selected of the London Lead Company, which show 0.0236 per cent., and of W. Blackett showing 0.0318 per cent., while our Missouri leads used for white lead purposes are also comparatively high in copper. Herr Landsberg states that, while it is difficult to give any limit, 0.003 to 0.004 per cent. is undoubtedly safe. For those who produce lead from argentiferous base bullion by the zinc process, copper is without any danger, as it can be brought down to very low limits, with the greatest certainty and ease. Iron to the extent of 0.003 per cent. has no bad effect, especially as the bulk of it is eliminated during the process of manufacture, as the analysis of Clausthal white lead given fully proves. Bismuth, the only metal which passes through the zinc desilverizing process and the ordinary refining processes without being separated from the lead, has been proved by Dr. Hampe to be neutral, as 0.1 per cent. even did not affect the color of the product. A different and somewhat perplexing state of affairs is revealed by the action of silver. While previous to the introduction of modern processes for the extraction of silver from lead, there was hardly one good corroding brand in the market holding less than 0.002 per cent., and running as high as 0.007 to 0.008 per cent., the lead now produced by the desilverizing process will show a reddish tinge, even if holding as little as 0.001 to 0.0015 per cent. That small quantities of silver have the effect of giving a reddish tinge to white lead, would seem to be shown by the following experiment made by Herr Landsberg, at Stolberg. He desilverized lead until it contained only 0.0006 per cent., and then added to different portions of the lead obtained sufficient quantities of the silver to carry it to 0.002, 0.0035, 0.0050 and 0.0065 per cent., respectively. These samples were then corroded at the same time and under the same conditions, and white lead was obtained in which the intensity of the red tint showed a regular progression in the order of its increasing percentage of silver. While the presumption is that silver caused the tinge alluded to, it is not absolutely certain whether or not other conditions which escaped observation contributed to the result. It would be safe under all conditions, however, to assume that a percentage of 0.0006 to 0.0008 of silver is safe—a limit which can be readily reached by careful desilverization by the Parkes zinc process. With the exception of silver, therefore, the limits of purity are far above those which may be easily attained, even with ordinary care, and experience with lead before modern refining processes were introduced would tend to show that even those limits might be safely exceeded. It is, therefore, a question whether greater caution exercised in the manufacture of white lead itself might not bring a wider range of metal into use. There seems to be little foundation for the assertion that gray or yellowish color ought to be referred to the quality of the lead used, and some chemists incline even to attributing the reddish tinge to others than the cause already noted.

Bannow and Kraemer claim to have traced the reddish color to the presence of a low oxide of lead, the formation of which was due to a lack of air during the process—a view in which they are sustained by Lorscheid. Weise traces the gray color to the presence of minute particles of metallic lead in material poorly prepared for the market. He, too, assigns much of the trouble to irregularities in the process, bringing about incomplete oxidation. He analyzed highly-colored portions from a lot obtained while the process was imperfect, and found a considerable quantity of oxide of lead. It does not seem surprising, says Herr Landsberg, that an imperfect product is obtained when it is considered that the operations are uncertain, especially on a large scale; nor is it astonishing that various tinges will appear when operating with a metal the oxides of which show such intense and various shades as lead does. In using materials 999.9 parts of which are composed of this metal, it is not to be supposed that the injurious influence of the oxides possibly formed should be insignificant when compared with the minute quantities of impurities which have hitherto been



THE CALLADAY SCROLL SAW.

so frequently and so unjustly accused. Without considering the possible effect of impure reagents in the manufacture, it seems proper to call attention to one fact too much neglected by the smelters of lead, one which, by the way, has much to do with the fitness of the metal, notably for the manufacture of sheet lead and the high qualities of so-called "virgin lead" for the latter purpose. Both in copper and in steel, the great importance of eliminating the oxygen absorbed during the refining processes has long been recognized. With lead this matter has not, to our knowledge, ever been taken into consideration. By using the proper methods for reducing the suboxide absorbed during the refining process, the resistance of the metal to acids might be increased on the one hand, and on the other a possible source of coloring of white lead might be avoided.

SCIENTIFIC AND TECHNICAL.

English manufacturers of agricultural machinery are devoting considerable attention to

COMPOUND PORTABLE ENGINES.

At the recent Smithfield Club Show three engines were exhibited, among others being one by Messrs. Garrett & Sons, of Leiston, of which *Engineering* gives the following details: The engine is of the intermediate receiver type, with cranks at right angles, and the cylinders, which are not steam jacketed, are respectively 7¾ and 11½ inches in diameter, the stroke in both cases being 10 inches. The engine is rated by its makers as a 10-horse. The steam pressure used is 100 pounds per square inch, and we are informed by Messrs. Garrett that during a series of recent trials on the brake the engine worked with as low a consumption as 22.8 pounds of water per brake horse-power per hour, the load on the brake being at the time equal to 29-horse-power, and the engine making 178 revolutions per minute. This trial lasted 2 hours 4 minutes, and the consumption of Llangennech coal was at the rate of 3.17 pounds per horse-power per hour, the evaporation being 7.2 pounds of water per pound of coal, from a temperature of 110 degrees. This is a very excellent performance as far as the consumption of water is concerned, but the evaporative duty of the boiler is open to improvement. The engine has the valve chests on the outer side of the cylinders, and the slide valves are of the Trick pattern, giving a double-ported admission to the steam. For facilitating the starting of the engine, Messrs. Garrett have introduced the arrangement of stop valve. When in its extreme position to the right, the valve admits steam to the high-pressure cylinder, and places the exhaust of that cylinder in connexion with the valve chest of the low-pressure cylinder. In its mid-position the valve partly throttles the steam admission to the high-pressure cylinder, but at the same time allows live steam to pass to the low-pressure cylinder, while the exhaust of the high-pressure cylinder, in place of passing to the low pressure valve chest, passes to the low-pressure exhaust. In the extreme left-hand position the valve shuts off steam from both cylinders.

In a recent number of *Comptes Rendus*, M. J. Saleran calls attention to

DEFECTIONS IN THERMOMETERS AND HYDROMETERS,

if used for certain purposes. Changes in thermometers ranging as high as 8 to 10 degrees occur at printing-ink works, where oils are heated for several days to 270 degrees, in glycerine works and with rectifiers of benzol. Glass is not merely modified when heated to 300 degrees; it undergoes true deformation at far lower temperatures. Thus, the hydrometers used in sugar works, which are often exposed for a considerable time to temperatures of 95 degrees, are affected. After an immersion of some days they are completely modified, their weight decreases and they become erroneous to the extent of 7° to 8° B. The editor of the *Chemical News* adds that in many chemical works it has been found necessary to submit all hydrometers used for hot liquids to a weekly comparison with a standard instrument.

Judge Bond has rendered a decision in the United States Circuit Court at Baltimore, in the case of the Pullman Car Company against the Baltimore and Ohio Railroad Company. He refuses to grant an injunction against the railroad for an infringement of the Pullman patent.

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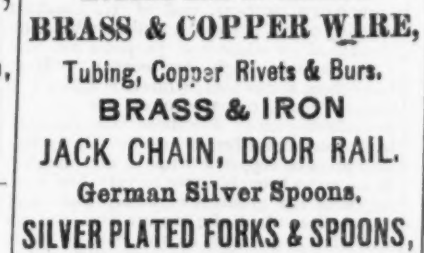
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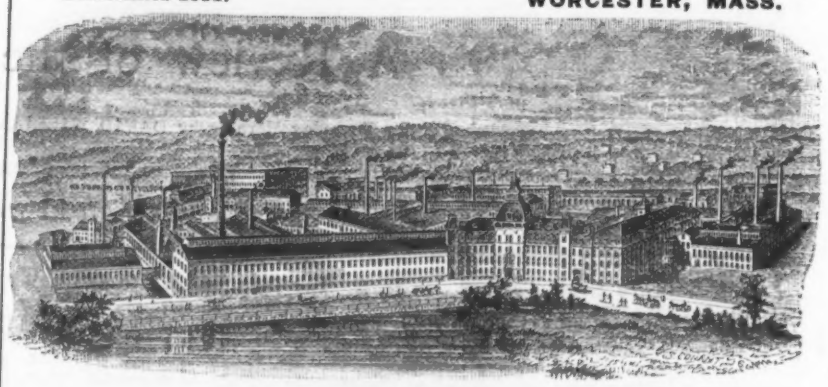
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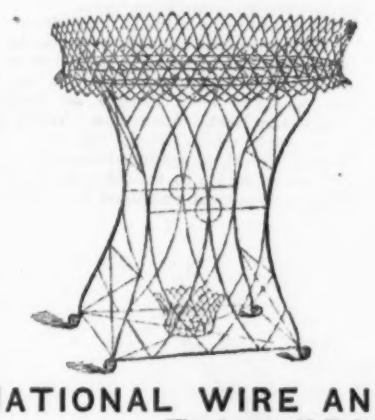

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(From the Chicago *Daily Inter-Ocean*, December 16, 1880.)

Barbed Wire Suits.

Judges Drummond and Blodgett, of the United States Circuit Court for the Northern District of Illinois, rendered jointly, yesterday, in the barbed wire litigation, perhaps one of the most important opinions ever delivered in this country, involving, as it does, many millions in its results. This litigation was begun in the Federal Court here over four years since, and has been pending ever since. Fourteen bills were filed to inforce the barbed wire patents owned by the Washburn & Moen Mfg. Co. and Isaac L. Elwood, and these cases are all decided by the present opinion. The cases so disposed of are as follows:

Washburn & Moen Mfg. Co. and Isaac L. Ellwood *vs.* Jacob Haish; Washburn & Moen Mfg. Co. *vs.* Jacob Haish; Washburn & Moen Mfg. Co. and Isaac L. Ellwood *vs.* Illinois Fence Co. *et al.*; Washburn & Moen Mfg. Co. *vs.* Illinois Fence Co. *et al.*; Washburn & Moen Mfg. Co. and Isaac L. Ellwood *vs.* the Sandwich Enterprise Co. *et al.*; Washburn & Moen Mfg. Co. *vs.* the Sandwich Enterprise Co. *et al.*; Washburn & Moen Mfg. Co. and Isaac L. Ellwood *vs.* the Lyman Mfg. Co. *et al.*; Washburn & Moen Mfg. Co. *vs.* the Lyman Mfg. Co. *et al.*; Washburn & Moen Mfg. Co. and Isaac L. Ellwood *vs.* Stone City Barb Fence Co. *et al.*; Washburn & Moen Mfg. Co. *vs.* Stone City Barb Fence Co. *et al.*; Washburn & Moen Mfg. Co. and Isaac L. Ellwood *vs.* the Chicago Galvanized Wire Fence Co. *et al.*; Washburn & Moen Mfg. Co. *vs.* the Chicago Galvanized Wire Fence Co. *et al.*; Washburn & Moen Mfg. Co. and Isaac L. Ellwood *vs.* Edwin A. Beers, and Washburn & Moen Mfg. Co. *vs.* Edwin A. Beers.

The following eminent counsel were engaged in the conduct of these cases:

For the complainants: Coburn & Thacher, Chicago; Thomas H. Dodge, Worcester, Mass.; Benjamin F. Thurston, Providence, R. I.; Offield & Towle, Chicago; West & Bond, Chicago; Lawrence, Campbell & Lawrence, Chicago; Charles Mason, Burlington, Iowa; Hiram P. Dillon, Topeka, Kan.; Miller & Godfrey, Des Moines, Iowa.

For the defendants: George Payson, N. C. Gridley and Munday & Evarts, of Chicago; George Christy, of Pittsburgh, Pa., and Albert H. Walker, of Hartford, Conn.

Owing to the importance of the subject the opinion is given in full.

In the Circuit Court of the United States for the Northern District of Illinois. Washburn & Moen Mfg. Co. and Isaac L. Elwood *vs.* Jacob Haish.

Washburn & Moen Mfg. Co. *vs.* Jacob Haish.

These are two of a series of 14 cases brought by the plaintiff upon the chancery side of this court for an injunction and damages, by reason of the alleged infringement by defendant of certain patents owned by the complainants relating to barbed fence wire. By the first suit the plaintiffs allege that they are the owners of the following patents, issued by the United States.

1. Patent No. 67,117, issued July 23, 1867, to William D. Hunt, and reissued, No. 6976, March 7, 1876, to Charles Kennedy, assignee of William D. Hunt.

2. Patent No. 150,683, issued May 12, 1874, to Joseph H. Glidden, and reissued, No. 6913, February 8, 1876, to said Glidden.

3. Patent No. 66,182, dated June 25, 1868, issued to Lucien B. Smith, and reissued, No. 7136, dated May 23, 1876.

4. Patent No. 157,124, dated November 24, 1874, issued to J. F. Glidden.

All of which patents, it is charged, have been duly assigned by mesne assignments to the plaintiffs, the Washburn & Moen Mfg. Co. and Isaac L. Elwood.

The patents involved in the second suit are as follows:

1. Patent No. 74,369, issued to Michael Kelly, dated February 11, 1868, and reissued, No. 6902, dated February 9, 1876.

2. Patent No. 84,062, dated November 17, 1868, issued to Michael Kelly, and reissued, No. 7035, dated April 4, 1876.

3. Patent No. 163,965, issued to Charles Kennedy, dated August 11, 1874.

The title to all of which patents has, it is claimed, been, by mesne assignments from the respective patentees, duly vested in the complainant, the Washburn & Moen Mfg. Co.

The defenses set up are:

1. A denial of the patentability of the devices in question, because from the state of the art it only requires mechanical skill, and not inventive genius, to construct them.

2. A denial of the validity of said patents for want of novelty, on the ground that barbed wire has been publicly known and used long prior to the alleged inventions.

3. A a denial of the validity of the several reissued patents for the reason, it is insisted, that the inventions now claimed by the reissues are not found in the orignal specifications, drawings, and models.

4. That, even admitting the validity of the letters patent, the defendant does not infringe the same, nor any of them.

5. A denial of the complainant's title to the Hunt patent, and their right to maintain this suit upon the title shown.

With regard to the last point named, raising the question of title to the Hunt patent, it is sufficient, we think, to say, that the objection comes too late to be considered upon the merits of the cause. In the assignment by Hunt of his interest in the original patent he purports to convey all his right, title, and interest in the said letters patent, "excepting 32 or 33 counties heretofore sold and assigned," not designating the counties thus previously sold and assigned; and the defendant insists that the conveyance by Hunt is so far ambiguous as that nothing passes by this assignment, because it is uncertain what counties were so reserved or had been previously conveyed. We think it enough to say that this reservation is such as is capable of being made certain by competent evidence, showing what counties had been actually conveyed by Hunt. The bills allege that certain counties in certain States were the ones upon which the exception operated, and the answers do not traverse or deny this allegation. Besides this, since the assignment from Hunt was made this patent has been reissued to Hunt's assignee, and we think it must be presumed that the title was fully exhibited to the patent officer at the time of such reissuance; at least that a reissue to the assignee of Hunt raises a presumption of title in the assignee. If the defendant wished to raise the question as to whether the reservation included the territory now in controversy, they should have raised it by their answer, or at least have put in proof tending to show that the title to some part of the territory involved in this suit was not conveyed by the original assignment from Hunt.

A large mass of testimony has been put into the cases bearing upon the question of novelty and the state of the art at the time these inventions are claimed to have been made. The defendants have introduced voluminous proofs tending to show the public use of barbed wire for fencing purposes long prior to any of these alleged inventions. We will not take the time to examine those proofs in detail, but dispose of that branch of the case by saying that these proofs fail to satisfy us that barbed wire for fencing purposes had ever been publicly known or used prior to these inventions in such manner as to defeat these inventions for want of novelty. We do not intend to be understood as intimating that the witnesses who have testified to the various instances of the use of barbed wire for fencing purposes have been guilty of intentional false swearing, but simply to say that this proof, which is almost wholly made up of the recollections of witnesses revived after the lapse of many years, and contradicted, as it is in most instances, by the explicit testimony of other equally credible witnesses, leaves so much doubt as to the actual existence of these various barbed wire fences, or any of them, as to make it at least unsafe ground on which to defeat a patent. The rule as to the degree of proof required to defeat a patent by showing prior use is well stated in the following authorities:

In Cochran *vs.* Ogden, 18 Wal., 120, the opinion having been delivered by Mr. Justice Swayne, it is said:

"The invention or discovery relied upon as a defense must have been complete and capable of producing the result sought, and this must be shown by the defendant. The burden of proof rests upon him, and every reasonable doubt should be resolved against him."

So, too, Judge Wheeler, in the case of Webster Loom Co. *vs.* Higgins, 16 Off Gaz., 675, says: "The burden of proof rests upon the defendant to show beyond any fair doubt the prior knowledge and use set up."

In Howe *vs.* Underwood, 1 Fisher, 175, Judge Sprague said:

"How invariable is it that after a great invention has been brought before the world, has become known to the public, and been put in form to be useful, that people start up in various places and declare that they invented the same thing before. The cotton-gin and the other discovery are illustrations in point; and others of similar character might be added indefinitely. These pretended prior inventors had thought of such a thing; that they had the conception of such a thing, perhaps; but they never carried it to the extent of making it of practical utility, so that the world could obtain possession of it. But when they find that another has completed that which they had begun, they are astonished that they did not see, think they must have seen all that is necessary, and claim that they have invented it. After having seen what has been done, the mind is very apt to blend the subsequent information with prior recollections, and confuse them together. Prophecy after the event is easy prophecy. I think that this is one of the cases in which several of the witnesses have been led into the illusion of believing that they knew before what they have learned or been taught."

The same learned Judge, in Hayden *vs.* Suffolk Mfg. Co., 4 Fisher, 103, said: "Where an invention of a useful machine or structure or improvement in any machine is shown to have been made, and it is sought to be invalidated by an old machine made years ago, the jury should examine the testimony and the evidence with care and caution, so as to be satisfied that that which is said to have existed was actually and substantially the same. * * *

"The rule of law is a reasonable one; at all events, it is a rule of law that a party that sets up such an old instrument that has passed away, has upon him the burden of satisfying the jury, upon a preponderance of evidence, that it is substantially the same as what has taken place before they will set aside the patent."

So, in Goodyear *vs.* Day, 2 Wallace, Jr., 283, Mr. Justice Grier says: "It is usually the case, where any valuable discovery is made or any new machine of great utility has been invented, that the attention of the public has been turned to the subject previously, and that many persons have been making researches and experiments. * * Many experiments may have been unsuccessfully tried, coming very near, yet falling short of, the desired result. They have produced nothing beneficial. The invention, when perfected, may truly be said to be the culminating point of many experiments, not only of the inventor, but by many others. He may have profited indirectly by the unsuccessful experiments and failures of others, but it gives them no right to claim a share of the honor or the profit of the successful inventor."

The testimony as to the state of the art shows that fence wire and wire fences and wires for such purposes, composed of two or more strands twisted or laid together, were old at the time these inventors entered the field; also that fences had been, long before Hunt's invention, armed with spikes or other sharp projecting points, for the purpose of making them more effective in resisting the encroachments of animals or other intruders. Indeed, the thorn hedges, which have been used almost from time immemorial, are in one sense only a barbed fence, their effectiveness as a barrier arising mainly from the natural thorns or spurs with which the hedge shrubs are armed. It must be conceded, both from the proofs in these cases and from those common facts within the knowledge and observation of all intelligent persons, that the idea of furnishing a fence or wall with some kind of sharp spikes or prickers is old. The ordinary picket fence; the device of spikes on area

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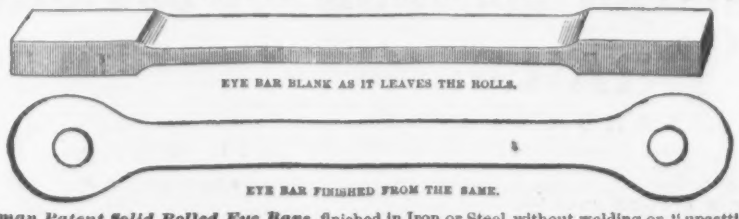

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railings to prevent loungers from leaning against them; the placing of broken glass, pottery or sharp stones or spikes upon the tops of walls to protect fruit gardens, are well-known illustrations of what we refer to. The most that can be said of these old devices, as applicable to these patents, is that they narrow the field for the exercise of inventive faculty and limit the range of the patents.

In this connection it is proper to consider briefly the objection that these devices are not patentable from the fact that in view of what was well known in the same direction it did not require inventive genius to make any of the devices involved in these patents; but that only mechanical skill was requisite to adapt old devices to this new use.

There is no doubt that a device, in order to be patentable, must be the result of inventive genius. The mere mechanical adaptation of old things to new uses is not unusually invention, unless in combinations; and yet it is extremely difficult in many cases to say just where the inventive faculty asserts itself as the controlling force. And the authorities furnish us no satisfactory test to apply and determine this question. Although there is usually little difficulty in determining as a matter of fact in each case whether a device is or is not in some degree the result of invention, if there is any invention required, then the law will not attempt to measure its extent or degree. If, for instance, the proof had shown that wire provided with barbs, spurs, or prickers was a well-known article, used for other purposes than fencing, there would be no difficulty in saying that it did not require invention, or the exercise of the inventive faculty, to substitute it for fencing purposes, in place of plain wire which had been used before. But we cannot say that the inventive or creative faculty is not required, in devising a mode by which plain fence wire can be armed with spurs, so as to make it available as an effective fencing material. The proof does not show that such wire was known, and applied to other uses. No one, so far as this record shows, had made or used it before for any other purpose; so, that to our minds, it seems quite clear that it required invention to devise and produce a barbed wire which could be practically used for fencing purposes. In the absence of any other test, the courts have seemed to assume that the fact of the acceptance of a new device or combination by the public, and putting it into extensive use, was evidence that it was the product of invention. Or, as one of the counsel for plaintiff expressed it, "utility is suggestive of originality."

In Smith & Goodyear's Dental Vulcanite Company, 3d Otto, 486, Mr. Justice Strong said: "Undoubtedly, the result or consequences of a process or manufacture may, in some cases, be regarded as of importance when the inquiry is whether the process or manufacture exhibits invention, thought and ingenuity."

Webster, on the subject of patents, page 30, says: "The utility of the change, as ascertained by its consequences, is the real *practical test of the sufficiency of an invention*, and, since the one cannot exist without the other, the existence of the one may be presumed on proof of the existence of the other. Where the utility is proved to exist in any degree, a sufficiency of invention to support the patent must be presumed. We do not say the single fact that a device has gone into general use, and has displaced other devices which had previously been employed for analogous uses, establishes in all cases that the later device involves a patentable invention. It may, however, always be considered, and, when the other facts in the case leave the question in doubt, it is sufficient to turn the scale."

So, in Eppinger *vs.* Richey, 14 Blatchford, 307, Judge Shipman said: "Two facts exist in this case; one is that an important improvement has been made; the second is that the improvement is in a staple article which has been manufactured in this country for a long series of years. * * * * The utility of the patented article has been evinced by its large sales. * * * The inventor evidently gave to the public an article which it wanted and which it had not previously known, without giving to the general use of the invention, as a test of its patent ability, any greater importance than the Supreme Court, in the case of Smith *vs.* Goodyear Dental Vulcanite Company (above quoted), indicate should be given to this circumstance. I am of the opinion that the facts in the case fully establish the conclusions: 1. That, however simple the change in the method of manufacture apparently may have been, yet it was a change which required invention for its accomplishment. 2. That the improvement resulting from the changed method of manufacture has been so great that the article which is produced is, within the meaning of the patent acts, a new and useful article of manufacture."

Mr. Justice Shepley said, in the case of Isaacs *vs.* Abrams, 14 Off. Gaz. 862: "A change in the form of a machine or instrument, though slight, if it works a successful result, not before accomplished in a similar way, in the art to which it is applied, or in any other, is patentable."

Judge Shipman said in Standard Works *vs.* Sargent, 8 Blatchford, 346, "Utility is not an infallible test of originality. The patent law requires a thing to be new as well as useful, in order to entitle it to the protection of the statute. To be new in the sense of the act it must be the product of original thought of inventive skill, and not a mere formal or mechanical change of what was old and well-known, but the effect produced by the change is often an appropriate though not a controlling consideration in determining the character of the change itself."

Tested by the rule of utility here suggested, this record abundantly shows that the device in question has been accepted by the public to an extent which has hardly heretofore followed the most successful inventions. Its utility must be considered as a conceded fact. From what has already been developed, it is clear that it has made possible the cultivation of the extensive prairies of the West, the pampas of Brazil, and the steppes of Russia, where, before the introduction of this cheap mode of fencing, it was impossible; and it has, even to a great

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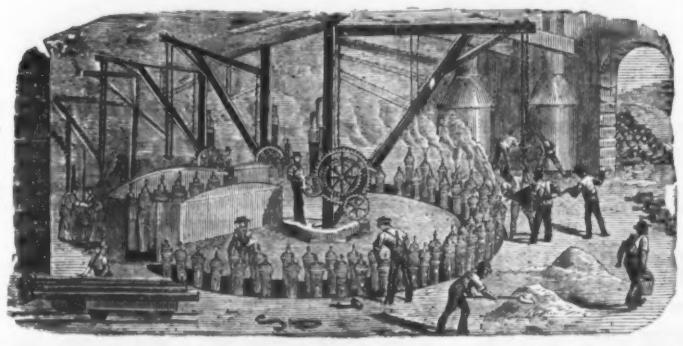

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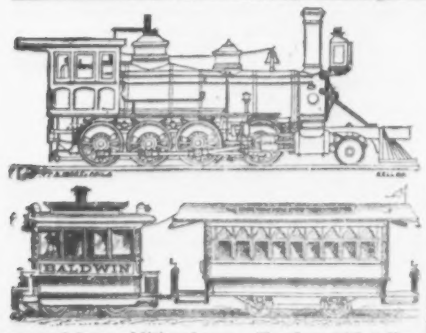

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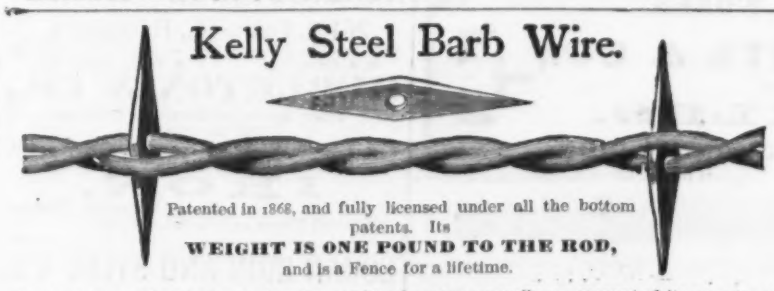

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extent, already superseded the use of wooden fences in the timbered portion of the country; and the question is, to whom but these inventors is the public indebted for this widely useful device?

The third objection, that the reissues are invalid, involves a consideration of the original patents in their order, and those patents as they now stand amended and reissued.

The Hunt patent of July 23, 1867, was for his method of "providing the wires of a wire fence with a series of spur wheels." The reissued is for "a fence wire provided with spurs for the purpose specified." In other words, what Hunt at first claimed as his invention, and obtained a patent for, was his special mode of arming the wires of a wire fence with spur wheels or barbs; but in his reissue he claimed as his invention a barbed fence-wire as a new article of manufacture, and it is argued that while he may have been the first to place his particular kind of spur or barb on a fence-wire, and may have been entitled to a patent for such specific device, yet, he nowhere claimed to be the inventor of barbed or spurred wire as such, and therefore his broad claim in the reissue should not have been allowed, and cannot be sustained.

It is not deemed necessary to attempt here any full discussion of the law in regard to the reissue of patents. It is enough to state, as a general rule, that what is claimed in the reissue must be found in the original specifications, drawings and models; that is, "no new matter can be introduced into the specifications." The invention, as claimed in the reissue, must be found properly described in the original specifications. In the language of the Supreme Court, in Powder Company *vs.* Powder Works, 8 Otto, 138, "the specifications may be amended so as to make it more clear and distinct, the claim may be modified so as to make it more conformable to the exact rights of the patentee, but the invention must be the same. So particular is the law on this subject that it is declared that no new matter shall be introduced into the specification. This prohibition is general, relating to all patents; and by 'new matter' we suppose to be meant new substantive matter, such as would have the effect of changing the invention, or of introducing what might be the subject of another application for a patent. The danger to be provided against was the temptation to amend a patent so as to cover improvements which might have come into use, or might have been invented by others, after its issue. The Legislature was willing to concede to the patentee the right to amend his specification so as fully to describe and claim the very invention attempted to be secured by his original patent, and which was not fully secured thereby in consequence of inadvertence, accident or mistake; but was not willing to give him the right to patch up his patent by the addition of other inventions, which, though they might be his, had not been applied for by him, or, if applied for, had been abandoned or waived."

So in Russell *vs.* Dodge, 3 Otto, 463, Mr. Justice Field said: "And as a reissue can only be granted for the same invention embraced by the original patent, the specification could not be substantially changed, either by the addition of new matter or the omission of important particulars, so as to enlarge the scope of the invention as originally claimed. A defective specification could be rendered more definite and certain, so as to embrace the claim made, or the claim could be so modified as to correspond with the specification."

The doctrine of these authorities is that the inventor may in his specification on the reissue make his description more full and accurate; but he must not substantially change it so as to describe another device, or cover anything not in the original.

It would seem from the specification, and testimony of Hunt, that his idea of the mode of utilizing his device was for the user to purchase the spurs and fix them upon such of the wires composing his fence as he thought desirable; but experience demonstrated that the value of the invention consisted not in teaching each fence builder how to barb his own wire, but in the introduction of barbed wire as an article of manufacture, and in furnishing to the consumer the manufactured article ready for use without further need of mechanical skill, or the use of tools to fit it for its purpose beyond the single act of fastening it to the posts. It can hardly need evidence or argument to prove that Hunt's device is much more accurately described as "barbed fence wire," than as a method of barbing wire; and if he was the first to suggest the idea of barbing wire for fence purposes, he had the right to cover that by his patent. The specifications in the original and reissued patent are substantially the same. No material change is introduced, and whatever change is made is merely that of giving point or direction to the invention now claimed.

It is true that in his specification, original and amended, Hunt describes his invention as "an improvement in fences," but this is no part of the substance of his specifications, but only the mere name which he chose to give to his device. Nor do we see any reason why Hunt, having described his method of barbing fence wire, might not have had the broad claim in his original which he obtained in his reissue; and if he could have had it in the first instance, he certainly had the right to it in the reissue. Hunt then, for the purpose of this case, must be deemed to have been the first to enter the field as an inventor of barbed-wire fencing. Others who followed him may have patents, subject to his, for improvements. His mode of barbing his wire was by a spur-wheel revolving loosely on the wires, or by single spurs strung upon the wire by holes punched through them. These spurs may have been expensive to manufacture, or affix to the wire, but that only went to the practicability of adopting his device, in competition with other fencing material then in use, and not to its novelty.

The next patent in order of time involved in this controversy is that issued June 25, 1867, to Lucien B. Smith, which, although earlier in matter of date than Hunt's, yet is of later conception, Hunt's invention going back to 1865. The only advance made in the art by Smith's invention was the idea of fixing the barbs by the short kinks, or bends in the wire, so as to prevent them from moving lengthwise on the wire. So far as this device was an improvement on Hunt's, it may perhaps be held valid, but it cannot be held to include all equivalent methods of preventing lateral motion, because Hunt had suggested keeping the spurs at a suitable distance apart, by means of "flanges or otherwise." This Smith patent has been reissued with a claim for the bent wires as a means of preventing the movement of the barb lengthwise thereon, and we do not see any well taken objection to the reissue; but the device seems of little importance in this case, as none of these defendants use it or its equivalent. We only refer to it as showing another step toward the perfected wire as now used.

The next patent to be considered in the order of time is that issued to Michael Kelly, Feb. 11, 1868. This patent was for thorns or barbs, fixed rigidly to the wires, so that they could neither slide lengthwise nor revolve upon the wires. Two modes of accomplishing this result are shown—one of stringing them upon the wires, by holes through the center, and then compressing them upon the wire by blows or pressure, and the other by "laying another wire of the same or different size alongside the thorn wire and twisting the two together;" but no claim was made for the latter mode in the original patent. By the reissue this feature is made the fourth claim, and, it seems to me, properly allowed under the law, as it was clearly described and suggested in the original specifications.

The second Kelly patent is for a flat wire pierced with holes, through which spurs made of pieces of wire with the ends cut diagonally, so as to leave them pointed without further manipulation, were thrust, and by compressing the wire so as to clamp the barb thus inserted in each hole. The only feature of this patent which it is claimed affects this case is that it shows, for the first time, a wire barb made sharp or pointed at both ends by being cut off diagonally; but barbs had been before this time made sharp by cutting the sheet metal diagonally, and it was certainly no invention for Kelly to point wire by cutting it diagonally after it had become a frequent practice to cut sheet metal in the same way for that purpose.

The Glidden patent of May 12, 1874, showed a device for keeping the wires of a fence stretched or spread apart by means of a slotted tube. It also showed, as part of the mechanism, a barb made by coiling a short piece of wire between its ends around the fence wire. This feature was not claimed in the original patent, but is claimed in the reissue as part of the invention, and as it is shown in the original specifications and drawings, the patent may be considered as having been properly reissued to cover this device. The second Glidden patent of November 24, 1874, is for a "twisted fence wire, having the transverse spur wire D bent at its middle portion about one of the wire strands of said fence-wire, and clamped in its position and place by the other wire strand twisted upon its fellow, substantially as specified." The proof shows that the *final form of fence-wire* and spur which has been adopted for practical use is substantially that shown in the last Glidden patent; but it seems to us there was nothing left in the line of invention to justify the issue of this patent to Glidden as an inventor. The idea of barbing fence-wire was Hunt's. The idea of fixing the barb rigidly upon the wire and holding it in place by another wire twisted upon it was Kelly's. The wire barb looped over the wire, or one of the wires, was that of Glidden's earlier patent; and by grouping all these devices into one finished wire, a result is obtained substantially like that shown in the final Glidden patent of November, 1874. There was nothing new in Glidden's last patent, and no room for the claim of invention in the wire therein provided.

In the suits brought by the Washburn & Moen Mfg. Co. and Isaac L. Ellwood against Haish, the defendant is charged with infringement of the Hunt patent, the Smith patent, and the two Glidden patents. As already said, we consider the Smith patent and the last Glidden patent as unworthy of further consideration in connection with this case.

The proof shows that the defendant, Haish, manufactured a twisted fence wire, armed with a wire barb, cut diagonally, so as to leave the points sharp, and which is bent in the form of an "S" so as to clasp both wires and extend the sharp points in opposite directions from the wire.

Defendant claims that even if the Hunt, Kelly and Glidden patents are valid, he does not infringe, because his barb differs essentially from the barb of either of the complainant's patents mainly in the fact that it cannot be used except in combination with a wire of at least two strands. Assuming the validity of the reissue of Hunt, Kelly and Glidden, there can be no doubt that Haish infringes Hunt's claim for "a fence wire, provided with spurs" or barbs. It also infringes Kelly's idea of a rigid or fixed barb, held in place by the twisting of two wires together; and Glidden's barb, made by bending a short piece of wire around the fence wire so as to leave the two sharp ends projecting to form the spurs or barbs.

Glidden's device for forming the barb is undoubtedly a very simple one, and rests very close to the border line between mechanical skill and invention. After Hunt had made barbs by cutting sheet metal into stars, or spur-pointed wheels, to be strung upon the wire by a hole through the middle, the points of the spurs being necessarily obtained by cutting the metal diagonally at the periphery of his wheel; and after Kelly had shown his two-pointed barb strung upon the wire by means of a hole through the middle and held in place by another wire twisted upon the thorn-wire, it would seem to require but little invention to form the barb by bending a short piece of wire, pointed at both ends, around the fence-wire, thereby forming a loop in place of the hole through the barb shown by Kelly. The loop is, when made, only the hole which Kelly punched through his barb; and yet there can be no doubt that the wire barb shown by Glidden is much more readily made and attached to the fence-wire than the Kelly barb, which must be first strung upon the wire by passing the end of the wire

through the hole before it can be fastened or fixed in place thereon; and, as before remarked, if utility is one of the tests of inventive ability, the proof showing clearly that it has been substantially adopted by all the manufacturers as the method of barbing wire. Glidden's method of forming the barb is not shown by the proof to have been anticipated by either method, and it is clearly new and useful; but when once the idea of looping or clasping a wire barb around the fence-wire has been shown, there was then no invention in such slight changes of the loop as are shown in the Haish barb. It is true the Haish barb is required by its form to clasp both wires, but Glidden might without change of the essential principal of his barb, loop it around both wires, if for any reason it was found desirable to do so. The underlying thought or principle of the Glidden barb is that of bending it over or around the fence-wire, instead of punching a hole through the barb and passing the fence-wire through the hole; and when once the principle is shown it is obvious that a great variety of barbs or loops can be made, all of which produce only one result.

This discussion leads us to consider for a moment the various forms of barbs cut from thin or sheet metal. It is manifest that there is, and can be, no essential difference between making the barb from strips of thin or sheet metal cut diagonally so as to leave both ends pointed, and wrapping or bending that around the fence-wire, and making a similar barb from round wire, as shown by Glidden; nor does the fact that sheet metal barbs are cut so as to present more than two points when wound around the fence-wire, or interlaced between the strands, make them any less an infringement of Glidden's device, or relieve them of liability to Hunt.

We, therefore, come to the conclusion that complainants have the right to the relief asked by their bills; the principles we have laid down, in our estimation, fully covering the controverted questions in all the cases before us. Decrees may be prepared finding that defendants infringe, and referring the cases to the master to take account of damages and profits.

The Russell & Erwin Mfg. Co.'s Paris Exhibit.

In Prof. Blake's report on the exhibits from Connecticut at the Paris Exhibition, some information of more than ordinary interest is given about the exhibit of the Russell & Erwin Mfg. Co. This exhibit included an assortment of all the various qualities and styles of builders', cabinet and general hardware and tools, including a great variety of door locks, padlocks, handles, bolts, hinges, fire-irons, pulleys, sheaves, chisels, screw-drivers, wrenches and general tools, artistic fittings in statuary, bronze, nickel, gold and enamel, for door, window and fire-place decoration. Two gold medals, one honorable mention and two bronze medals were awarded it. We quote from Prof. Blake's report as follows:

ART CASTINGS.

Under Class 25—"Bronzes, various art castings and *repoussé* work"—the Russell & Erwin Mfg. Co. claimed a place for their doors and window fittings in bronze and enamel. For sharpness and beauty of line and detail, with smoothness and almost polished finish of surface, their sand castings of bronze are probably unequaled. These castings were exhibited in plain bronze, as taken from the sand, and in several other styles of finish. Some are nickeled, some richly gilt and some enameled. They consist chiefly of finger and key plates and knobs. The enameled pieces are good specimens of *champlevé* work and show a decided mastery of the art.

The bulk of the exhibit of this firm was classed as "general hardware" in Class 43, and is more fully noticed under that head. Their show case—or the installation, in Exhibition parlance—was an exceptionally good one and was well located.

The goods exhibited by this firm were diverse in object, form and finish, but are referable to three chief divisions:

1. Builders' and general hardware.
2. Carpenters' and cabinet makers' tools.
3. Wood screws.

The first included a great variety of door locks, latches, padlocks, handles, bolts, hinges, pulleys, sheaves, fire irons and fireplace fittings, besides artistic fittings in bronze, nickel, gold and enamel for doors, windows and fire-place decoration. Under the second head may be mentioned chisels, gouges, screw-drivers, braces, wrenches and general tools; and under the third, flat and round-head screws of all sizes, both of brass and iron, bright and blued. Of these objects, some were entered in Classes 11, 25, 43, 59 and 66, but were chiefly judged by the jury of Class 43 and the jury of Class 66.

The claims of the firm as presented to Class 43, in repsonse to the official inquiries, are as follows. In respect of peculiarities:

1. The novelty and practical simplicity of the improved and patented mechanisms.

2. The interchangeability of the machine-made parts or members and the precision and uniformity with which they are fitted and finished.

3. The manner in which the parts are proportioned to the strains brought to bear upon them, for the purpose of obtaining the greatest amount of strength and durability with the least expenditure of labor and material.

The particular merits claimed were: 1. The comprehensiveness of the display, embracing as it did 4000 distinct representative specimens of all classes and grades, from ordinary goods of cast iron to the finest descriptions of artistic bronze fittings, finished in gold, nickel and enamels.

2. For door, cabinet and padlocks, the combination, in the highest degree of simplicity and durability, of mechanism with scientific distribution of materials and of the labor upon them; also the lightness, strength and convenience, with grace and beauty of form, of their steel keys.

3. The practical utility of their pull-out reverse latches, "which possess the only mechanism that satisfactorily accomplishes this object without seriously impairing the strength and durability of the movement."

4. For the patent anti-friction latch, novelty and the effective manner in which it serves to lessen the friction of latch bolts and increase the durability and usefulness of the mechanism.

5. For wood screws, their improved form, sharpness of thread, smooth finish and uniform quality.

6. For builders' tools, superior quality of metal, smoothness and precision of finish and improved forms and proportions, better adapting them to the uses for which they are intended.

Some of the products were repeatedly and closely examined with great interest by the members of the jury of Class 43, familiar with hardware of European manufacture. Surprise was expressed at the accuracy of the mechanism, and, in general, at the low prices.

The enameled and gilt goods are obviously exceptional and of high cost. They are objects of luxury, and are suited only to the finest and most elaborately finished doors of hard wood. The enamel is of the *champlevé* variety, and is highly satisfactory as to quality. The composition is evidently good, and the colors are pleasing. The result shows a power over the details of this art which should give success if it were applied to the manufacture of objects of a purely decorative nature.

The castings in bronze deserve a special mention as choice examples of sharp casting with a perfectly smooth and finished surface, so smooth that it would at first seem that the metal had been worked over and engraved after being removed from the mold. The fine details of the engraved design are brought out satisfactorily, and do not require any finishing operation. Such castings are appropriate for door butts, knobs, escutcheons and finger plates for doors. They are used in plain uncolored bronze, or they are nickeled or gilded according to the fancy of the purchaser.

The jury upon bronzes, art castings and *repoussé* work, Class 25, made special note of these bronze castings, and, in addition to the gold medals given by other classes, awarded a bronze medal in recognition of their excellence.

RUSSELL'S REVERSIBLE LATCHES.

A few of the more important novelties shown by the firm in the way of locks and tools will be briefly noticed.

Reversible latches, as is well known, are so made that they may be adapted to either right or left hand doors by simply pulling out and turning the latch or bolt before or after the lock is fixed in its place upon the door. Some of the objections which have been made to these latches are that their delicately formed parts and springs rendered them liable to break and to get out of repair, or that the bolts could be reversed at pleasure, after mounting, by mischievous children or malicious persons to the injury of the door and lock. These difficulties the firm claim to have overcome by Russell's patented improvements.

*To illustrate this, the firm exhibited a 6-*inch mortise lock, with the cap plate removed so as to expose the working parts. The latch bolt has a head-bolt of the ordinary form, but the shank is round and has a shoulder and button at its small end, which serve to connect it with the yoke in such a way that the movement of the latch longitudinally is controlled by the yoke, but after the head of the bolt has been drawn forward beyond the face plate of the lock it can, by reason of its swivel connection with the yoke, be freely turned to the right or left. A spiral spring restores the latch to its proper position after it has been reversed or operated on by the knob.

With the ordinary construction of follower it would of course be impossible to draw the latch bolt forward, but it is seen by an inspection of the lock that this follower consists of three parts—the two parts are hubs provided with ears which dovetail into each other, so as to form of the two a compound hub, having a slot in the center through which the T, before the knob spindle has been inserted, is free to slide sufficiently to allow the latch bolt to be drawn forward and reversed; but after the spindle has been fixed in its position this T can no longer be moved, and the three parts are united to form a solid hub, which operates through the yoke upon the bolt in the usual way, and of course prevents the reversal of the latch.

Instead of the spiral spring a heavy flat steel or brass spring can be used with equal facility.

The T is the part of the mechanism upon which most of the wear and strain fall, and is made of wrought iron or steel. The pieces called hubs are made of cast iron or gun metal.

From the description it will be seen that this invention provides, at very moderate cost, a mechanism which is fully as strong as the old form of latch, and not likely to become deranged easily, and which, before it has been placed upon the door, can be reversed at will by simply pulling out the head of the bolt and turning it half-way round; but once fixed in position upon the door it becomes impossible to reverse and it operates as an ordinary latch.

ANTI-FRICTION LATCH.

In closing a door, unless the latch bolt is in the very best condition as respects lubrication, and in the position of its sloping surface upon the "striker" or plate of the jamb, there is a great amount of friction, and ofter a serious shock and jar, causing the flat side of the latch to bear directly against the lock case, thus producing a great amount of friction, so that frequently the bolt binds and refuses to move unless violence and slamming is resorted to. To obviate this difficulty Messrs. Russell & Erwin have invented and patented a supplemental bolt, placed just below the ordinary latch bolt and connected with it, so as to control its motion. It is a strong and effective arrangement for reducing to a minimum the friction of latch bolts and giving them a smooth, uniform and easy action.

The improvement, by an exceedingly simple, strong and durable mechanism, causes the striking plate to act directly and without loss of power to force back the bolt, which, in its motion, is entirely withdrawn from contact with the lock case, so that the

slightest motion imparted to the door causes it to latch surely, gently and noiselessly, and renders slamming alike difficult and unnecessary.

The operation is as follows: Beneath the latch bolt of the ordinary form is placed an auxiliary latch or controlling lever, which is pivoted so as to swing in a horizontal plane. It is provided with a pin on its upper surface, which projects into a grooved recess in the under side of the latch and connects the two in such a way that the slightest swinging motion of the lever pushes the bolt back, and so guides it in its motion that it is entirely withdrawn from contact with the lock case. It will be observed that the face of the auxiliary latch is in advance of the nose of the bolt, and consequently in operation it comes first in contact with the staple fixed upon the doorway, and acts directly and without any mechanical loss of power to force back the latch.

This mechanism transforms the rubbing into rolling friction upon the nose of the bolt, prevents the extreme pressure upon its face, increases the durability of the lock, and is of especial value for glass or heavy doors.

This improvement was shown not only in detached locks and latches, but by mounted samples upon doors so that their action could be witnessed and tested.

STEEL KEYS.

Two important qualities of keys are strength and lightness, a combination which can best be secured by making them of steel. A full assortment of such keys was exhibited, and some of them for doors and padlocks were illustrated in full size engravings in the circulars issued by the company.

The peculiar feature common to them all is that the bow, stem and bit of the key are made in one piece, from spring steel. Owing to their form and method of construction they are produced entirely by machinery at a very moderate cost. The advantages of these keys are: they are nickled to prevent rusting, they possess light, convenient and graceful forms, and combine the highest amount of strength and durability with a minimum expenditure of labor and material.

ANTI-FRICTION PULLEYS.

With the increasing use of heavy plate glass windows and large window sash, a pulley with a strong and well-made axle becomes a necessity. The ordinary sham axle or steel pin pulley may answer very well for light sash which are not often raised, but even with light sash, if much used, there is a disagreeable amount of friction and wear. One of the principal defects, also, in the ordinary form of door and window pulleys is that, after they have been fixed in position, the axis of the pulley is not accessible either for cleaning or oiling, and the result is that the gradual gumming of the oil and the accumulation of dust and grit upon the axis, cause it not only to grind out the bearings, but to work with a great deal of noise and friction. These difficulties some inventors have attempted to overcome by providing various forms of oil passages with reservoirs leading from the face of the pulley to its axis, but these have proved only a partial success, from the fact that they greatly disfigure the face of the pulley, do not effectually prevent gumming or grinding, and require frequent cleaning. The peculiar feature of the invention shown in the exhibition, is that the wheel or sheave is mounted upon a series of small anti-friction rollers, made of steel, and fitted so as to run freely around a fixed central pin or axis. These anti-friction rollers are quite free at their ends, and, therefore, there is no friction at these points, as is the case where such rollers are supported in revolving rings. It is obvious from the construction that there can be no sliding friction, and the inconvenience and unpleasantness arising from the use of oil is overcome. As there is none but rolling friction, the accumulation of dust makes but little difference in the operation of the mechanism, for the steel pins roll about in it as readily as wheels upon a carriage road. The inventor does not claim that this system of anti friction rollers is new, but that the simplified construction and improved system of manufacture enable him to produce a greatly improved pulley, without the objectionable feature of grinding, and vastly more durable than the old form. It can be produced by machinery at a cost permitting it to be sold for about the same price as a first-class pulley of the ordinary style.

UNIVERSAL HOLLOW AUGER.

The hollow auger exhibited by the firm in the collection of carpenter's tools of their manufacture, is similar in principle to a scroll chuck, and is intended for use either in a bit stock or a lathe. It differs from a chuck, however, in this, that two of the jaws are replaced by cutters and are provided with a clamp for holding them, while the other two jaws serve as guides. The four pieces are moved simultaneously from or toward the center, by means of a scroll thread, which is furnished with a chuck nut that prevents the slipping of the jaws after they have been adjusted for any particular sized tenon. For use as a universal chuck, it is not necessary to remove or in any way derange the cutters, as they are clamped so that the points are a little behind the holding face of the jaws, and cannot touch work that can be fixed in them.

It replaces the whole series of the old form of hollow augers, and from its facility of adjustment and the readiness with which the cutters can be removed for sharpening, it is more efficient as a cutting tool, while at the same time, and without any change, it answers all the requirements of a universal chuck.

This exhibit was the first appearance of this firm at any of the great international exhibitions. In the most important matter of the installation and arrangement it was a model worthy of imitation. A case, rectangular in plan, 25 feet by 12 feet upon the floor, presented two broad sides. The ends were recessed, so as to form at one end an alcove somewhat secluded from the crowds of visitors, and at the other a small but convenient office where special explanations and exhibitions of the goods could be given to those specially interested. The doors also to this office were fitted with the butts, locks, bolts and bronze trimmings made by the firm. A line of narrow table cases, with inclined glass tops, projected some 15 inches beyond the upright cases, and gave room for the display of the goods in the packages as put up for trade. The monogram of the firm was neatly executed upon a velvet background in the central division of one of the vertical cases, by means of the wood screws of brass and iron, arranged so as to form the letters. The number and brilliance of the bronze, nickeled, brass and plated screws gave this monogram the appearance, at a little distance, of rich gold and silver embroidery. The personal attention and supervision of Mr. H. E. Russell, Jr., the secretary of the company, was given to the preparation and installation of this exhibit. On Mr. Russell's return to Connecticut the company was represented by an agent—William R. Comings—who was constantly in attendance to answer questions and give information.

The business of the Russell & Erwin Company was commenced in the year 1839. Now from 650 to 1000 hands are employed. Steam engines, with an aggregate of 450 horse-power, move the machinery. The factories have seven acres in area of floor space. The buildings are of brick. They are substantially built, are well ventilated, heated by steam, lighted by gas, and protected from fire by the best system of extinguishers and fire escapes.

The jury of Class 43 awarded a gold medal for the locks and hardware, including wood screws. The jury of Class 66 awarded a gold medal for the builders' hardware. The jury of Class 25 gave a bronze medal for the beauty and perfection of the bronze castings.

INDUSTRIAL ITEMS.

MASSACHUSETTS.

Since the introduction into New England of the "Buffalo Scales," by Messrs. Hoitt, Rugg & Co., of 53 Oliver street, they have been steadily growing in popular favor, and there is now a large and increasing demand for them. The house make a specialty of platform and counter scales, but they do a considerable business in large scales of different kinds. Although Messrs. Hoitt, Rugg & Co., are a comparatively new firm, the junior partner, Mr. Rugg, has had an experience of 19 years in the Fairbanks Scale Company's Boston house. The "Buffalo Scales" contain all the improvements which make the modern article valuable, and the general satisfaction which has followed their use seems to be a sufficient guarantee for their excellence.—*Boston Commercial Bulletin.*

The Seymour Cutlery Company, of Holyoke, is devoting considerable attention to sheep shears.

The American Bolt Company, of Lowell, with James Minter as president, and a capital of $200,000, has been chartered under the general law.

South Abington shipped away 846 boxes, 31 kegs and 5 cases of tacks, nails, shanks and eyelets last week.

RHODE ISLAND.

One of the busiest jewelry establishments in Providence is that of Hamilton & Hunt. This house makes a specialty of manufacturing fine rolled plated chains, of which they make 748 patterns, patent buckle bracelets and lockets. Established in 1870, their business has grown to such an extent that they now require the help of 120 workmen, and have been compelled to erect a new factory (now in process of construction) 25 x 55 feet, two floors, the whole of brick, which they expect to occupy early in January. The united capacity of the two factories will be equal to the production of $300,000 worth of goods per year, which are sold in all parts of the world. The factories are supplied with all modern conveniences and the best of jewelry machinery.—*Boston Commercial Bulletin.*

CONNECTICUT.

The Birmingham Iron and Steel Works have passed into the possession of the Peck, Stowe & Wilcox Co., of Southington.

NEW YORK.

Filley's foundry has shut down for the present. Bussey, McLeod & Co.'s foundry will close for inventory this week. The Co-operative Foundry will stop work this week for inventory and repairs. Pramer's foundry has closed for the purpose of allowing an inventory to be taken.—*Troy Standard.*

A new boiler and locomotive shop is to be started at Schenectady which will give employment to 1000 men.

Mr. J. G. Bell, No. 52 John street, New York, is making arrangements to represent a limited number of leading American manufacturers at the Industrial Exhibition at Matanzas, Cuba, to begin February 10, 1881. Mr. Bell is well acquainted with the Spanish language, has had a large experience in the export trade and has an extensive acquaintance among planters and merchants on the island. He is much interested in the Exhibition, and seems to be well qualified to give satisfaction as a representative of exhibiting manufacturers.

D. M. Osborne & Co., of Auburn, have contracted for 2,000,000 bricks for additions to their already extensive mower and reaper factory. Their gray-iron foundry is melting over 30 tons of iron per day, to supply a molding floor 107x300 feet. New machinery is constantly being added in other departments.

The Auburn Iron Works, leased by Osborne & Co., are turning out more iron than ever before in their history, and still the cry is, "More wanted." It is all for their harvesting machinery.

Owing to delay in delivery of the new engine, Clapp's new rolling mill, at Auburn, is not yet running. Its starting time is yet a matter of uncertainty.

The Alliance upright steam hammer recently put into Sheldon's rolling mill, at Auburn, gives good satisfaction.

NEW JERSEY.

Furness, Bannister & Co., Newark, have been nearly fourteen years engaged in the business of manufacturing cutlery at the Nassau Works, Corner of Nassau and Sheffield St. They have been working full ever since they started, and are now employing 60 hands. They make all varieties of stand-

ard cutlery, under quality guaranty, and have had a satisfactory business during the past year.

PENNSYLVANIA.

Both the Franklin and Chambersburg furnaces, of Messrs. Hunter and Springer, will go out of blast in about two months. The Chambersburg Furnace is also a cold-blast furnace, and has made at her best 11 tons in 24 hours.

The Schuylkill Canal is closed for the season. The total tonnage of anthracite coal from all the regions for the week ending December 18, as reported by the several carrying companies, amounted to 371,467 tons, against 510,845 tons in the corresponding week last year, a decrease of 139,378 tons. The total amount of anthracite mined for the year is 22,958,893 tons, against 25,812,568 tons for the same period last year, a decrease of 2,853,675 tons. The quantity of bituminous coal sent to market for the week amounted to 89,033 tons, against 54,255 tons in corresponding week last year, an increase of 34,778 tons.

The coal transportation for the week on the P. and R. is thus reported: Tons for the week, 100,493; corresponding week last year, 104,419; total tons for the fiscal year, 423,573; same time last year, 632,811 tons. Decrease this year of 209,237 tons.

Two hundred and fifty-eight tons of pig iron were manufactured at the Bechtelsville Furnace last week.

The project of establishing a manufactory of fire engines and apparatus in Reading is being discussed by A. F. Spawn, of New York, one of the largest dealers in such apparatus in the country, and a number of Reading gentlemen to whom he submitted his proposition. Mr. Spawn has a manufactory in Newark, N. J., and salesrooms in New York, and would continue the latter if he should establish the proposed works in Reading.—*Reading Eagle.*

The Connellsville Coke Company intend erecting 200 ovens in addition to those now in blast, building 35 blocks of houses and improving its shaft to a capacity of 1000 tons per day.

The Executive Committee of the Lehigh and Schuylkill Coal Exchanges met on the 30th ult. at the office of the Lehigh Coal and Navigation Company, in Philadelphia, and decided to recommend a continuance of the present prices during January.

Work was resumed this morning at the Pottstown Iron Works.

VIRGINIA.

Graham & Robinson have a new charcoal furnace in blast in Wythe County. It is named the "boom." Crockett & Co., have also a new furnace in that County, which has just gone in blast.

White Rock Furnace (charcoal) in Virginia, will go into blast in 30 days.

OHIO.

In the parlors of the second national bank, last Friday evening, a conference was held between representatives of the Alliance Cutlery Company and certain Akron capitalists, in which the matter of the removal of the cutlery works to this city was thoroughly discussed. In the event of their coming here, which now seems almost a certainty, Akron money will be invested in the business, which will probably be carried on in the Empire Works building on Broadway, when the latter is vacated by Mr. Seiberling.—*Akron Sunday Gazette.*

The La Belle Flint Glass Company, Bridgeport, are running to their full capacity and do not expect to shut down at all. After filling orders they will immediately commence making a complete stock of goods suitable for the spring trade.

The Cincinnati Rolling Mills have plenty of work for three months. The iron founders are all very busy, so much so that there seems to be room for at least one more first-class foundry, which is fully anticipated in the near future.

The works of the Akron Strawboard Company are running night and day to their utmost capacity. Improvements are being constantly made and new machinery added as occasion requires. At present two new steam boilers are being added to the works.

The Cincinnati Malleable Iron Works are running to their full capacity, with largely increasing demands for their goods. Though this establishment is comparatively new, it has been very successful and anticipates a large increase of business the coming year.

The "boom" has struck the Akron Stoneware Company in a manner that gives no uncertain sound, and the business of the company is growing rapidly. The capacity of their shops has been found wholly insufficient to meet the growing demands, and additional buildings are in progress. A new down-draft kiln has just been completed; it is 19 feet in diameter and is one of the largest in the ward. A large frame extension 18 x 48 feet has been added to the west end of the main shop, which will give much-needed room to the manufacturing department. In addition to this a frame warehouse, 100 x 34 feet, is nearly completed. In the spring a switch will be built connecting the shops with the Valley Railroad.—*Akron Daily Beacon.*

The Youngstown Measuring Pump Company, of Youngstown, have leased the Snyder Carriage Works buildings for a term of years, and have begun putting in machinery and fitting up the buildings for their new use. The works are about starting up in a few days, with a force of from six to ten men, which will be rapidly increased.—*Boston Commercial Bulletin.*

The Union Foundry Company, of Cleveland, expect to add sidewalk lights to their list of manufactures in the spring.

The Benwood Furnace at Martin's Ferry is on full, but running light, and may have to stop on short notice on account of scarcity of stock—coke and ore.

Mr. Frank J. Korte, senior member of the firm of Duvall & Co., of Janesville, has been presented with a gold watch by the workmen in his employ.

Another new manufacturing establishment opened its office on the 1st day of this month, at Cincinnati, for the purpose of manufacturing a very superior quality of corrugated sheet iron for roofing, sidings, shutters, &c. They will also make curved sheets for ceilings. The parties representing this establishment are Mr. John F. Hazen, well known in Cincinnati as one of its leading iron merchants, and Mr. William Clark, of Pittsburgh, whose experience in the manufacture of sheet irons is well known and appreciated. The machinery being constructed for these works is first-class, combining all late improvements, and will be in full operation on or before the 1st of February. The works are situated at 179 West Second street; office, southwest corner Fourth and Main streets.

The Hughes Cultivator Company, at Hamilton, are manufacturing a new and very valuable hardware specialty in the way of a steel hoe. This hoe is entirely different from any article of its class that has ever before been introduced. It is made of best quality spring steel, and is a novelty, both in its construction and the manner in which it is used. The blade being made of thin spring steel, about 2 to 3 inches in width, shaped like a hook, with the end rounded and both sides ground to a fine edge, it can be used to dig up and pulverize the dirt, or, by turning it on either side, it can be used for shaving off the grass and weeds. The blade is attached to a handle of any convenient length or size. It is very light and strong, and can be used in the place of heavier hoes for digging and pulverizing. The works of the above named company are quite busy preparing for anticipated heavy sales in the coming season.

The New York and Ohio Iron and Steel Company is represented by a new firm at Cincinnati, composed of Mr. W. H. Carruthers, late of the firm of Mitchell, Tranter & Co., and Mr. J. C. Bramwell, late of Plumer & Bramwell, iron merchants and manufacturers of Cincinnati. These gentlemen have had large experience in the iron business in the West. They have their office and sample rooms at the northwest corner of Second and Vine streets.

ILLINOIS.

The Vulcan Iron Works are constructing an upright engine for the Peshtigo Lumber Company for their new steam barge, the cylinder of which is 32 inch bore by 32-inch stroke. They are also building an upright engine, 22 x 22, for the same company, to be used in one of their mills. For O. P. Green, the Vulcan Iron Works are constructing a pair of engines to be used on the dredges, and a pile driver, engine and boiler for the Chicago Dredging and Dock Company. They report business active, and are employing more men than at any previous time.—*Chicago Industrial World.*

The Excelsior Iron Works, of Chicago, have just received an order from the Joliet Steel Company, for two tubular boilers, 5 feet in diameter and 16 feet long, to be made of Otis steel. We understand that the Joliet Steel Company are contemplating the erection of three new Whitwell stoves, to run their blast furnaces.

The Pullman Car Works, at Pullman, have six boilers now ready for operation.

The employees in the nail department of Jos. H. Brown & Co.'s. mills, at Irondale, have been having a vacation of a few days on account of not having a sufficient supply of plate iron. This lack of plate iron is owing to the fact that the puddlers are on a strike, not for an increase of their wages, but for iron of a softer quality, as they are not able to make as many heats as desired, the material which they have been using being too hard. It is expected they will resume on next Monday.—*Chicago Industrial World.*

Grand Tower Furnace is doing very well, making 70 tons Bessemer daily.

KENTUCKY.

The Louisville Steam Forge Company, recently incorporated by Joshua F. Speed, Norvin Green, and others, have purchased land in Louisville, and are pushing work vigorously on the erection of their new buildings. They intend to prepare for the manufacture of all descriptions of large forgings, but will make a specialty of railroad car axles.

Having completed her repairs, the Ashland Furnace resumed blowing Tuesday morning and is doing well.—*Ashland Independent.*

At the Norton Iron Works the forge department received a new roll Sunday, the 25th, and started Monday morning, after a stoppage of two weeks. The nail factory shut down Friday, expecting to resume Monday, but, owing to the turning of the nail plate rolls, was not able to do so, and had to remain idle until yesterday morning, when it was expected that it would start up again.

MICHIGAN.

Smith & Brainard, of Flint, claim to be the largest manufacturers of charcoal in Michigan. They are working five sets of kilns, all of the round-brick pattern, and each holding 50 cords of wood and producing 2000 bushels to the kiln at every firing. They have 10 kilns at Clio, 10 at Flint, 8 at Ganes, 10 at Durand Furnace and 10 at Lansing. They annually consume 40,000 cords of wood and make 1,600,000 bushels of charcoal annually. They employ 50 men in coaling and a large force in cutting and hauling. They have contracts to supply the Peninsula Iron Co. and the Detroit and Lake Superior Iron Co., of Detroit. They make coal from beach, maple, elm, ash and oak, which, mixed, gives good satisfaction in iron making.

CANADA.

Henry W. Warren, manufacturer of hammers, Bridgewater, Ontario, has secured new and more commodious quarters, with unlimited water-power, on the Lachine Canal, Montreal, to which point he is now moving his plant. His correspondence should hereafter be addressed to Cote St. Paul, Montreal.

Early in December, the Washburn & Moen Mfg. Co. notified the men employed in the heating department of the Quinsigamond Mill, Worcester, that they would reduce the wages for heating scrap from $4 to $3.70 per ton, but on representations to their part changed the figure to $3.20, to go into effect on the 21st of December. The men struck and now offer a compromise to the effect that scrap heating be made $3.60, but that, on the other hand, the pine working charcoal pig in fires be increased from $7—the amount hitherto paid—to $7.40 per ton. There are 26 fires in all, each requiring four men, so that about 100 men have struck.

The Iron Age

AND

Metallurgical Review.

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JAMES C. BAYLES - - - *Editor.*
JOHN S. KING - - - - *Business Manager.*

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The publishers of *The Ironmonger*, 44a Cannon street, London, England, will receive orders for subscriptions and advertisements on our regular terms.

CONTENTS.

We would call the attention of our readers to the completeness and value of the annual statistical reports now appearing in *The Iron Age*. Last week we published our annual report of the British iron trade by quarters, prepared by our accomplished correspondent in England. This week we review the year's happenings in the metal markets and in the Eastern iron market. Next week we hope to print, in addition to our quarterly table of blast-furnace statistics, showing the condition of the blast furnaces of the country at the close of 1880, a review of the course of the Western iron market during that year. These reviews are very interesting and instructive, and will well repay careful perusal. They are prepared with especial care as to accuracy of statistics, and should be preserved for reference by all for whom they have present or prospective value.

The Demand for Rails and the Supply.

A year has now passed since the country, and especially the iron trade, were wild with the excitement caused by the general belief that we were then approaching a period of unrivaled activity in finance, commerce and industry. While in general the year has been one of almost universal prosperity, the predictions of the most enthusiastic have not been verified. The course of events in the iron trade is too fresh in the memory of all concerned to need recapitulation here, but it will be of interest to review the progress made in the extension and renewal of our railway system, chiefly as affecting the rail trade. A year ago, when current and frequently accepted estimates of the additions to railway mileage during the year 1880 went as high as 12,000 miles, we accepted 7000 miles as the most reasonable figure, and based upon it some calculations as to the probable demand for iron and steel rails, chiefly with a view to ascertaining whether and to what extent it would be necessary to draw upon foreign countries for additional supplies. In view of the uncertainty of estimates of this kind, notably of the increase of mileage and the extent of renewals required, the figures then presented are well borne out by the facts as now ascertained. They prove that, broadly, the principles upon which they were based may be relied upon as correct and encourage a similar attempt for the coming year.

The *Railroad Gazette*, in a recent issue, chronicles the construction of 6139 miles of railroad during the year 1880, and adds that when all the information has been collected it will be probably found that something like 7000 miles of railroad have been completed during the year. The year has been one of great and sustained activity, the earnings of almost all our lines of traffic, great or small, having increased over 1879 by at least an average of 20 per cent., while their operating expenses have quite generally undergone some reduction, and, in many cases, have been decreased considerably. A feature which is highly encouraging to the realization of a steady progress is the fact, repeatedly alluded to during the course of the year, that the great majority of new enterprises have been in the nature of extensions of existing roads. There has been an absence of that speculative mania of railroad building which has characterized earlier periods of rapid extension of our system. Although capital is readily obtained for *bona fide* investments of this class, there are no serious indications of a repetition of the errors of those times, and everything augurs well for a continuance of the present state of affairs, when prudence keeps enterprise within legitimate bounds. While it is impossible to forecast the disturbing effects of a possible failure of one or more of the crops of our staples, or of other national disasters, it will not appear sanguine to expect that the record of the coming year will equal, and probably somewhat exceed, that of the one just passed. The work of extending our railways has not shown any abatement during the last few months beyond that referable to the season, and many indications justify the assumption that it will continue at least during the coming year. The growing prosperity of this country, which is in such contrast to the condition of almost all European nations, has already, and will in the near future, attract a large number of emigrants, inducing the opening of new territory hitherto uncultivated. In view of these and many other indications, it seems safe to assume that in the year just opened we will witness a further extension of our railways of at least 7000 to 7500 miles.

As a basis for the estimation of the minimum demand for nails for 1881, we possess a series of valuable figures compiled by Mr. James M. Swank, on the one hand, and by Mr. Henry V. Poor on the other. The former gives us accurate data for the production of steel and iron rails and the amounts imported, together representing fairly the consumption of each year. Mr. Poor publishes annually statistics of the railroad mileage, while the *Railroad Gazette* makes weekly returns of current construction. Both, however, do not include in their figures the additional mileage of sidings, double track and track in yards, &c. From present statistics these add as much as 24 per cent. to the length of road on an average in the United States, and therefore at least 20 per cent. must be added to the number of miles of new road to get at the actual miles of track laid during the year. As the rails used for one mile of standard track weigh 98½ tons per mile for 56-pound sections, 100 short tons per mile are generally accepted as a safe average amount. We are thus in a position to compute pretty closely the quantity of rails required for a given number of miles of new track. On the other hand, we have accurate figures of the production and importations of all but the last year, for which Mr. Swank has just published a preliminary estimate, which we know from former years to be very near the actual figures. While thus we possess the means of estimating the requirements of new roads quite closely, provided the assumption of the mileage to be built is near the truth, there is another element which can only be arrived at indirectly. We refer to the renewals of old worn-out rails. This is naturally influenced by a variety of causes which it is difficult to trace. While there are nearly 3,500,000 net tons of steel rails now in the tracks, taking into account those already removed, there must be at least 5,500,000 tons of iron rails, of which many are deteriorated, and a large percentage of which must be exchanged for new material within a few years. Whether his exchange will take place rapidly or slowly depends largely upon the financial position of the roads, and the events of the last year have gone to show that it has assumed proportions of considerable magnitude. It has been proven also that for those renewals steel is taken to an extent which has prevented any material expansion of the manufacture of iron rails, and placed a pressure on that of steel which could be relieved only by drawing upon foreign sources more than it was expected. A year since we estimated the consumption for 1880 at 1,500,000 tons, and assuming that the inability to obtain sufficient quantities of steel rails at acceptable rates would induce smaller roads to buy iron rails, it seemed natural that larger quantities of the latter would be made, thus leaving only 100,000 tons of steel rails to be purchased abroad. This has not been verified, and, consequently, though our estimation of the total demand was correct, the share taken by foreign countries was undervalued, the actual importations approaching 275,000 tons. With the data at our disposal, we may, therefore, place the amounts required for renewals at figures approaching those found in former years, by deducting the quantities for "New Roads" from the total consumption indicated by Mr. Swank's figures:

CONSUMPTION OF RAILS IN THE UNITED STATES.

Year.	New mileage.	Total consumption.	New roads.	Renewals.
1867	2,449	627,157	293,800	332,357
1868	2,979	736,795	357,500	419,295
1869	4,615	906,749	553,800	352,919
1870	6,070	1,019,153	748,700	270,453
1871	7,608	1,341,434	951,000	390,434
1872	5,720	1,530,850	715,000	815,850
1873	4,069	1,148,849	508,600	640,249
1874	2,305	847,724	288,100	559,595
1875	1,758	810,770	219,700	591,070
1876	2,657	879,916	332,100	547,816
1877	2,177	764,744	272,100	492,644
1878	2,747	882,695	343,400	539,295
1879	4,721	1,157,420	566,500	590,920
1880*	7,000	1,475,000	840,000	635,000
1881*	7,500	1,583,000	935,000	650,000

* Estimated.

From these figures it will be seen that from 1867 to 1879 the amounts of rails used for the construction of new lines have ranged between wide extremes, while the quantities used for renewals since 1873 are remarkably uniform. It is probable that a considerable proportion of the excess reported for 1872 was really still in makers' yards and importers' storehouses, and that it ought to be distributed over the succeeding years of adjustment between an excessive supply and a declining demand. The depression following that year is closely reflected in the figures for the years 1873 to 1878, from which it can be shown that the percentage of renewals fell so rapidly that it is impossible to account for it merely on the ground that the increased duration of steel rails brings about a decline of renewals. The financial position of many roads has been such as to prevent their expending more than was absolutely necessary on repairs and renewals, and therefore it appears to us fair to assume that at least 635,000 tons were used for that purpose during 1880, while everything points to an increase in 1881 which will carry the total to an increase of 650,000 tons.

With a probable extension of our railroad system by from 7000 to 7500, and possibly 8000, miles during the year 1881, and with current and accumulating repairs, it seems safe to predict a demand upon our rail mills of at least 1,550,000 to 1,600,000 tons. The question naturally arises how far our own mills can fill this demand, and to what extent their output must be supplemented by supplies from foreign countries. All the Bessemer steel works of this country, with their new additions, have a capacity of 1,750,000 tons of ingots, equal to a capacity of about 1,100,000 tons of rails, but it would not probably be safe to rate them higher than 1,000,000. Although they turned out 775,000 tons during 1880, the numerous recent additions which are only now coming into operation will, in all likelihood, carry them to that figure. Our iron rail mills turned out 425,000 tons in 1880, and, with a steady demand, would again reach that figure, thus accounting for a total of 1,425,000 tons of rails. This would leave 125,000 to 200,000 tons as a minimum deficiency, a part of which, it is well known, has already been purchased, partly in England and partly in Germany.

Our estimates—while they are only approximate—therefore, show that all our own mills are sure to be taxed to their full capacity during the year, if they succeed in preventing any excessive amount of foreign material from coming in. It will appear, however, from present indications that possibly as much as 200,000 tons may be sent to us.

The proprietors of industrial establishments and the managers of railway companies in England, do not seem to be inclined to assume the risks to which they are exposed under the provisions of the "Employers' Liability Act." The idea of the framers of the law which has now gone into effect, was to secure to the employees a compensation for injuries received in consequence of any defects in the condition of the machinery or plant, or in consequence of negligence on the part of superintendents, overseers or fellow workmen acting under instructions or regulations of the employers. The latter are now putting forward various schemes by which they are relieved from this risk, and some of the insurance companies seem inclined to enter into arrangements with them. They have asked for statistics on the subject to guide them, and have, in some instances, obtained ample returns upon which they will probably base the schedule of amounts of premiums to be paid. Some of the larger concerns, notably the railway companies, as well as colliery proprietors and iron manufacturers, have resolved to make every endeavor to "contract themselves out of the act." The matter is rendered more complicated by the existence of many mutual accident funds to which, until now, employers and employees have each contributed their share. The employers refuse to continue these funds unless the workmen bind themselves not to take action under the Act, the payments to them being made contingent upon their agreeing not to prosecute. In some instances the employers have granted more liberal terms, and in others the workmen have signified their willingness to join in the scheme if somewhat larger payments were allowed in the case of death by injury. Another plan, which may be cited as an illustration of the strong opposition to the new law, has been spoken of. It is to give the workmen notice of a termination of their engagement and to re-employ them on the understanding that they give up any interest they might have in the act. This would be an extreme and an unwise course, and does not, from present prospects, seem likely to meet with much favor. On their part, the workmen appear to be willing, in very many cases, to make terms, nor do their demands seem unreasonable. In one instance even they have offered not alone to adhere to the mutual benefit fund association, but actually to defray the expenses of any litigation against their employers under the act. That the methods proposed of contracting to relieve the employers of liability are legal, is assured on the good authority of the Attorney-General himself, and therefore, probably, the new law will not have much more effect than to force employers to make provisions which might otherwise be neglected, and to compute the risk in the workman's remuneration in some way.

Individual Liberty and Conspiracy.

Our editorial comments on the recent decision of Judge Macomber refusing to enjoin the striking molders of the Johnson Harvester Company from further interference with the operations of that company by enticing away workmen, &c., has called out some adverse criticism. The *Labor Tribune* quotes from our article and says:

It seems to us our contemporary does not take a broad view of the decision of Judge Macomber; on the contrary, its view is very narrow, inasmuch as for the convenience of making out a case, it indulges in gross exaggeration. We would remind it there has been no summary action on the part of workmen in rolling mills such as it cites in any district under the management of that grandest of trades unions, the Amalgamated Association, since that organization became perfected. It compels headstrong firms to come down half way from the top of the tree and meet where both parties may have clear vision, and this has been accomplished much to the satisfaction of sensible employers.

We are not disposed to enter upon a discussion of the question of where the responsibility of the "grandest of trades unions" begins or ends; but it is a fact well known to all who have taken the trouble to keep themselves informed of the happenings in the iron trade, that in several instances workmen in rolling mills have done just what we described—thrown down their tools at a critical moment and walked out of the mill, in accordance with a prearranged conspiracy, leaving the owners to protect themselves from serious loss in the best way they could. Instead of "gross exaggeration" we dealt simply with facts. The latest instance of this kind which came to our notice, happened at the Vulcan Steel Works, St. Louis, and was made the basis of a criminal prosecution directed against the conspirators. But we do not expect fairness or intelligence from the *Labor Tribune*, and should not refer to the subject again had it not been called up by the letter of a valued friend, a gentleman well informed on all subjects connected with the relations of labor and capital, who writes: "I thought "when your article appeared that you could "scarcely sustain the point you made. "While, doubtless, such a course as you "referred to in the article would constitute "a legal conspiracy, I think our laws should "be so altered that there shall be nothing "criminal in a thing done by two or more "men which would not be criminal if done "by one man."

It seems to us that such an alteration of the law of conspiracy would be equivalent to its abrogation. There is a very important difference between the actions of one man or a hundred—or, to put it more in accordance with the views of our correspondent, between the action of one man and the action of two or more men acting in accordance with a prearranged plan. There can be no such thing as conspiracy until two or more men conspire to do something. Now, it is very probable that a conspiracy formed between two men or three, or a dozen, would be too insignificant to command any more attention, or lead to any more results, than would follow the doings of one man acting entirely within the law; but we see that there is an important difference when the conspiracy includes all the skilled workmen in a certain trade, and its object is to control the business policy of a corporation or to ruin it by preventing it from securing and retaining workmen in place of those who have gone out on strike. A great many employers have been ruined by such conspiracies, and millions of dollars of invested capital have been rendered unproductive for long periods by conspiracies of workmen to prevent other workmen from filling vacant places. In the article under consideration we said:

Suppose, for example, that a legitimate trade union, exercising what Judge Macomber considers their contitutional right to entice free workmen away from their work, should be successful in their effort to the extent of ruining an employer's business. Clearly, this would be conspiracy, even though no force or intimidation was used to drive away the workmen employed. It seems to us that while the decision above quoted is all right from the workmen's standpoint, it does not take a broad view of the relations between manufacturers and labor unions. The workmen in the rolling mill who throw down their tools at a time agreed upon, leaving charges in the furnace and iron in the rolls, are, perhaps, free to quit when they like. They are under no contract, and all their doings may be orderly and peaceable; but their action is the result of conspiracy to force the manufacturer to concede their demands by inflicting upon him, or menacing him with, great and serious injury to his business interests. The question is a larger one than Judge Macomber seems to realize, and while his ruling may be warranted in its special application to the case presented to him, it invites criticism by discussing broad principles in what seems to us a very narrow way. Individual liberty of action does not always justify organized action which deprives others of clear and recognized rights.

We believe that the point here made—namely, that what is the right of the individual becomes a crime against the public interest when several or many individuals conspire to do, in a way which shall injure some one else, what each may do for reasons of his own if he sees fit—is well taken and entirely defensible. It is not our duty to review Judge Macomber's decision, which, as we said, may have been perfectly warranted by the evidence; but every one knows that the term "enticement," when used in connection with the efforts of a formidable union to draw away the men employed to fill the places of strikers, is very elastic. No heads may be broken, and no one may have been told that to resist the efforts to "entice" him would be perilous; but every one who has been a workman or an employer knows perfectly well that under such circumstances pleasant words often have a terrible significance. The man to whom they are addressed knows that to refuse to listen and yield will make him an outcast in his class; that he will be socially ostracised, and that even his life would not be safe were he to openly defy the power he would gladly disobey if he dared. We do not charge that the "grandest trades union," or any branch of it, would decree him bodily harm and depute assassins to waylay him; but men are bullied and maimed under such circumstances more frequently than is pleasant, and the man who resists "enticement" knows perfectly well that he must look out for himself from that time on. Dangerous men will call him their enemy, and will need no order or authorization from a union to treat him as they would a venomous reptile. They will even disobey the orders of their leaders, if an opportunity offers, to gratify their hatred of the "scab." These are unpleasant facts, but they cannot be questioned. The man who is asked up to a bar by a committee, treated to whatever he may want, offered a railroad ticket and told in a whisper that the union would consider it a great favor if he would leave town by the next train, is quite as likely to go as if a masked ruffian should bid him go with no other argument than that of a cocked pistol. Few workmen ever have the moral courage to resist the potent influence of a trade union, even when its wishes are conveyed in language to which no one could take exception if no more was meant than was said. An individual workman, representing no one but himself, who should do on his own responsibility what he sometimes does as a picket or committee man of a union, would receive scant courtesy from those he might approach with invitations to leave town; but his act would be proper beyond question. It is only when behind the individual stands the union, and he becomes the mouthpiece of a conspiracy, that he has the power to trample on the rights of others. The law is perfectly right in condemning that as wrong which is done by a conspiracy, while leaving the individual free to do as he pleases within proper limits. When employers form a conspiracy for any purpose, they are, as we have shown in these columns, acting outside the law, and can be enjoined on the plea of any one who may suffer by their united action. The argument used by workmen that, if the manufacturer has the right to discharge them in a body without notice, they have the right to leave in a body without notice, is no argument at all. The individual workman would not question the right of his employer to dismiss him at any time, and he suffers no greater injury when all are dismissed than when he alone is told to go to the office and get his money—not as much, indeed. The employer, on the other hand, might be bankrupted in an hour by a conspiracy among his workmen to quit work at a certain time, whereas the individual workman, or any half dozen of them, might walk out of the shop without notice, and injure no one but himself by so doing. Now, let us suppose a case which illustrates what we mean, yet involves no stretch of the imagination. We will concede that every workman employed in a certain mill is working under an unconditional understanding that he shall receive so much

for a day's labor, and that the arrangement may be terminated by either party at will. There has been a meeting of the puddlers, at which it was decided to ask for an advance in wages. The demand was made and refused. The helpers, rollers, heaters and other workmen are in sympathy with the puddlers, and anxious to see the proprietors put in a position where they shall be afraid to refuse any demand of this kind. Meetings have been held and a plan secretly agreed upon which is to be carried out by the puddlers with the assistance of the helpers, the heaters, the rollers and the day laborers. At a critical moment, when there is a charge in every furnace and everything is in full swing, a signal is given, the puddlers put on their coats and march out, waiting around the door to be invited back with the assurance that they shall have the wages they ask for. The proprietor sees them go, and knows that to save his plant from practical ruin and himself from heavy expense he must act quickly. He calls a heater of experience and directs him to take charge of a certain puddling furnace. The heater replies that he cannot do it. The employer directs him to go to the office for his money, and is told that if he leaves, every heater in the mill will leave with him. He calls a roller to superintend the withdrawal of the charges from the heating furnaces, is again refused and told that if he dismisses the roller every other roller in the mill will go out with him. Would any one assume that the right of the individual to leave the mill when it suited him to do so, justified such a conspiracy as this? And yet what we have described actually happened in a mill we could name, and the manufacturer was bound to suspend operations for months before he was able to reorganize his working force. Meanwhile, the conspiracy embarrassed his movements at every turn, and made it impossible for him to secure men enough to start the mill until it was broken up by the fact that the necessities of the workmen forced them to seek again the employment they had so long refused and denied to others. It may be that "the grandest," &c., had no connection with this outrage on the rights of a citizen. We shall not venture any opinion on this point, but it was a conspiracy all the same, and should be called a crime.

WASHINGTON NOTES.

Reassembling of Congress—The Speakership—The Chinese Commissioners—Congress and the Fortification Bill—Values of Standard Foreign Coins.

(From Our Own Correspondent.)

WASHINGTON, D. C., January 5, 1881.

The reassembling of Congress to-day was apparently under auspices more favorable to the transaction of business than was indicated by the course of the majority of the two houses before the Christmas recess. Neither party, as a whole, is desireus of forcing an extra session, as nothing at all is to be gained by such a course. The fact that the patronage of the House, which is now in the hands of the Democrats, would be taken from their control on March 4 if there were an extra session, instead of after the first Monday in December, is not regarded by liberal-minded members of either side as a sufficient ground for calling Congress together, and it is quite certain that the manufacturing interests are not at all anxious to have any more of Congress than the Constitution and the statutes require. To complete the business actually required of this session, such as passing the regular appropriation required for the maintenance of the various branches of the government, will require some active work. There remain of the session fifty eight days, and of these eight are Sundays, which leaves net working days fifty, or a little over six days for each of the eight out of the eleven appropriation bills not yet reported or considered in the House. These will be required to be passed there and then by the Senate, and doubtless after all be submitted to a conference committee to adjust the differences between the two Houses. From this showing, despite the talk of the free traders in the House that they will bring up some one of their measures if only to test the sense of the two parties in that body, there is no likelihood of any Legislation at all on tariff matters, not even to give an opportunity for a record of votes. Frank Hurd, whose enunciations in his declaratory resolution represent the foreign manufacturers and the free trade clubs of England, is desperately anxious to cut some sort of a figure before the session is closed. Hurd was one of the solons who were relegated to private life by their constituents in the last turn of the wheel of political fortune, and, therefore, it is specially important to him that he should have some grand project on which to parade himself in any future schemes which may come around his way. Representative Tucker, more wise than Hurd, perhaps because he has been returned by his constituents to the Forty-seventh Congress, says that he has no hope of passing his hoop iron matter, and therefore will let it go over.

The arrangements preliminary to the Speakership are quietly going on among the friends of the different candidates, so that, in the event of an extra session being inevitable, they will be ready to proceed to active work immediately. The tariff men are getting their forces well in hand, and every day grow more confident that they will be able to control the Republican organization of the House.

The Secretary of State is daily expecting the return of Mr. Trescott, one of the commissioners sent to China to negotiate a new treaty between that country and the United States. In addition to the treaty to regulate Chinese immigration to the United States, according to cable advices received some weeks ago, the commissioners succeeded in consummating a commercial treaty. Mr. Evarts, speaking of this treaty, says that it was entirely beyond his expectations, that the very satisfactory terms arranged with respect to immigration, which places the regulation of the whole subject in the hands of the United States, were in themselves sufficient to crown the labors of Messrs. Angel, Trescott and Smith with success; but that the commercial treaty was something more than was expected, and he was anxious to see its provisions to determine whether it carries with it all that is claimed for it. Mr. Evarts says that he anticipates, in the early future, an enormous trade with the people of China, and this treaty will stimulate such a result. The preference given Americans in exports of cottons he regards as one important step gained in our commercial relations in that direction, and he anticipates there a vast market for our manufactures of iron and other metals.

Congress, in the regular Fortification Appropriation Bill, having stricken out the item of $500,000 for the manufacture of arms at the national armories, the projectors of the bill for the organization of the militia have taken the subject up. The Secretary of the Treasury, in the Book of Estimates, says, in the former connection: "Besides supplying the regular army, the militia, the various colleges and the other branches constituting the military establishment, the War Department has now to supply arms, ammunition, &c., to the Marine Corps and to the several executive departments, for use in the protection of public money and property, under the law of March 3, 1879. During the 10 years preceding the War of the Rebellion—from 1852 to 1861—there was appropriated annually, on an average, $251,000 for the manufacture of arms at the national armories, and with this sum the wants of a smaller army and of a smaller population permitted the gradual increase of them in store. The increased cost of the present breech-loading rifle, the greater demand for its use and the paucity of the appropriations of late years, have left the country in a dangerous condition, there being on hand July 31, 1879, subject to issue, but 27,435 breech-loading rifles and carbines. It is of the most vital importance to the nation that the manufacture of arms by this department be steadily continued, in quantities sufficient to render a gradual accumulation of them in store a certainty. The number of small arms on hand should never be less than 500,000."

It can hardly be said that there is much prospect of the passage of this bill at this session. The necessity of providing a larger supply of small arms is fully appreciated, and something doubtless will be done in that direction by the next Congress.

In connection with the appropriation of $20,000, recommended by the Secretary of the Treasury, for caring for, using and manipulating the United States testing machine at Watertown Arsenal, he adds: "This machine is too valuable to be permitted to stand idle. The determinations that may be made by it will be of value to the different departments of the government, as well as to the public generally. A much larger amount might be expended to great advantage."

The circular of the Secretary of the Treasury of January 1, proclaiming the estimation made by the Director of the Mint of the values of the standard coins in circulation in the various nations of the world, changes the values of the following coins from those proclaimed by the circular of 1880, as follows: The florin of Austria is reduced from 41.3 cents to 40.7. The boliviano of Bolivia, from 83.6 to 82.3. The Milreis of Brazil increased from 54.5 to 54.6. The peso of Ecuador, reduced from 83.6 to 82.3. The rupee of India, from 39.7 to 39. Japan having adopted the free-coinage system for silver, the yen, which was formerly given as 99.7 in gold, is now 88.8 in silver. The Mexican dollar, from 90.9 to 89.4. The sol of Peru, from 83.6 to 82.3. The rouble of Russia, from 66.9 to 65.8. The mahbub of Tripoli, from 74.8 to 74.3. The peso of Columbia, from 83.6 to 82.3. The peso of Cuba is given at 93.2, and the bolivar of Venezuela at 19.3. The monetary unit of Egypt, which formerly was stated as the pound, at 4.97.4, is now fixed as the piaster at .04.9.

NEW PUBLICATIONS.

THE OPEN FIRE-PLACE IN ALL AGES. By J. Pickering Putnam, Architect. Written for the *American Architect and Building News*. Illustrated by 269 cuts, including 36 full-page plates; 202 pages. Boston: James R. Osgood & Co. Price, $2.

Of the 202 pages, 72 are occupied by the full-page cuts, while the remaining 230 illustrations are distributed through the reading matter. Taken altogether the book is an exceedingly handsome one. The plates are from a variety of sources, and are, without exception, well printed. Many of them are beautiful reproductions of larger engravings. Mr. Putnam's own drawings are very beautiful, and as a draftsman he certainly ranks easily in the first-class. Several of the cuts we note are reduced from those which appeared in the *American Architect and Building News*. The historical examples collected and put in convenient form are very valuable, and no one interested in this subject can go through the book carefully without gaining much information of what has been done in the past.

When we come to the reason for making the book, we are somewhat disappointed to find that it is largely dependent upon a passing fashion. At the present time, it is the whim of fashion to have fire-places in nice houses; hence this work. As a means for heating, the fire-place may be classed as a barbarism, unscientific in principle, defective in method and operation. To combine heating with ventilation as a part of the same system, is certainly a grave mistake in any case where there are means available to do the work in a proper manner. If we would have comfortable and healthy houses, we must, during the cold weather, keep floors and walls warm, while the air which we breathe remains comparatively cool. To attempt to heat, by means of the fire-place, the walls and floors of a room, is a thing so wasteful that even our richest people shrink from the task. When warming or heating by means of warm air is undertaken, it is vastly easier and more economical to resort to some of the thousands of different kinds of heaters to be found in our markets, than to use any kind of fire-place. When the walls and floors of a room are kept at the same temperature as the human body, the question of warming the air necessary for thorough ventilation is an easy problem to solve. Ventilation then may become both extensive and thorough in its character. To gravely propose the introduction of a fire-place into every room in a house, making it a part of the heating apparatus, seems to be a most unscientific thing, if we consider the infinite amount of dirt, annoyance and waste which it occasions. Of the fire-places illustrated in this book, it would seem that there are scarcely half a dozen which are safe to place in a room containing fine works of art. Most of the fire-places shown are of such a design as to make smoking inevitable. The author has several plans of his own for converting an open fire place into a kind of heating furnace and pouring hot air into the room, or warmed air, as he would call it. We think we should hardly wish to adopt the apparatus under any circumstances when any other means for heating could be employed.

The use of the metric system in all calculations and experiments, as well as in making many, if not all of the sketches, prevents the work from being of any real value to practical men whose measures are all divided into feet and inches, and whose tables and books of reference are intended for use of feet and inches. The inch divided into tenths would have given greater facility for calculation, and made the work of some value to the workman.

In the numerous drawings and sketches from Mr. Putnam's own hand, we find a number of most delightful suggestions for interiors, methods of treating rooms, and the construction of mantels and mantel shelves. In these Mr. Putnam is, without doubt, deservedly successful, and we hope that he will find time, in the future, to give the world something more elaborate in this line.

THE WORKSHOP COMPANION. By Dr. John Phin. 160 pages. New York: Industrial Publication Co. Price, 35 cents.

This is a collection of useful and reliable recipes, rules, processes, methods, wrinkles, and practical hints intended for the shop and the household. Many of these are original, and in several cases the directions have been worked out and improved by the compiler or under his immediate supervision. In some of the largest and best works of this character published, owing to the ignorance or carelessness of the compiler, recipes are given with which it is utterly impossible to produce good results. In some cases portions of the directions are left out or given separately as distinct operations. Dr. Phin's great practical knowledge has enabled him to avoid such errors and to add useful information to directions which would otherwise have been quite unintelligible to ordinary persons. The directions for the use of cement are probably the best that have ever appeared. They are certainly the foundation of the remarks on this subject given in all recent works, having originally appeared in one of the magazines of which the doctor had charge. The sections on varnish and varnishing, though short, are exceedingly good and practicable, as well as the one on whitewashing or kalsomining. It is, in fact, a miniature cyclopedia. The subjects treated of are widely varied, and yet there is very little in the work that is not useful in some shape to the metal worker. The work has been prepared with very great care, and the chief aim of the compiler has been to give recipes which would not disappoint those who attempted to use them. There is a short section on wood polishing, in which there are many practical directions for finishing wood by the method known as the French polish. There are three or four pages devoted to the staining of wood, in which we find some excellent recipes and some directions which are valuable to those wishing to produce imitations of various woods. Had the object of the publisher been to make as large a book as possible, it might easily have been expanded to twice or three times its present size. A very complete index makes the information easily accessible.

Iron Rust in Boilers.—The oxidation of iron immersed in ordinary water, says *Engineering*, appears to be largely due to two causes—namely, first the absorption of oxygen contained in the water, and second, the absorption of oxygen set free during the decomposition of the water, hydrogen being set free in the latter case. M. Lodin, who has made a number of experiments on the corrosion of iron wires immersed in water and various solutions, and who has described his experiments in the *Comptes Rendus*, has arrived at the conclusion that the first of the above causes of oxidation is generally of the chief importance. With both distilled and ordinary water the temperature has a very important influence. Thus at 68° Fahr. the quantities of oxygen absorbed per square foot of iron surface per hour when immersed in distilled and calcareous waters respectively, were 0.258 grains and 0.330 grains, while at 212° the quantities rose to about 2.364 grains and 2.579 grains. The immersion of iron in all the waters tested was accompanied by the evolution of hydrogen, the action being least, however, in distilled water. At a temperature of about 260° Fahr., the decomposition of the water was found to be equivalent to the absorption of 0.01 grains of oxygen per square foot of surface per hour for distilled water; 0.0129 grains for calcareous water; 0.0182 for water containing one-fifth part of crystallized chloride of magnesium; 0.05 grains for water saturated with chloride of sodium; and 0.067 grains for sea water.

In the issue of *The Iron Age* of October 23d, 1880, we stated erroneously that a motion for a preliminary injunction had been denied in the case of the Chalmer-Spence Co. against J. Newton Pierce and Belfield & Co., before Judge McKenna in the United States Circuit Court for the Eastern District of Pennsylvania. As in an earlier case against Greer & Co., of Philadelphia, the Judge upheld the Ashcroft patent, No. 55,598, dated June 19, 1866, and on the 12th of October, 1880, granted an injunction against J. Newton Pierce *et. al.* in favor of the Chalmer-Spence Co., whose claim to a patent on an air space in connection with the use of non-conducting materials around boilers, &c., has thus been twice sustained.

Failure of the Joseph Dixon Crucible Co. and Fowler, Crampton & Co.

The prominent theme in mercantile circles yesterday was the assignment of the old firm of Fowler, Crampton & Co., importers of chemicals, followed immediately by the announcement that the Joseph Dixon Crucible Company had gone into a receivership. Upon investigation, *The Iron Age* reporter is satisfied to accept as correct the statement of one of the creditors of Fowler, Crampton & Co., that the mischief is wholly due to speculation. This firm is known to have netted $25,000 some months ago in a single transaction, but they bought largely of opium, though not in the so-called "syndicate;" also sugar and articles not strictly in their line; and the consequences are seen. They were at the same time agents for the Joseph Dixon Crucible Company, and held large amounts of their paper, the two concerns indorsing for mutual accommodation. At the office of the firm yesterday Mr. A. M. Lewis, the assignee, could not speak definitely as to the amount of liabilities, but put them down at $500,000. Respecting the value of assets, no estimate was possible, as they consist largely of real estate in Brooklyn, where their oil mills are located, also of merchandise, bills receivable, and open accounts.

The Joseph Dixon Crucible Company, upon receiving information of the suspension of Fowler, Crampton & Co., at once determined upon a receivership for the better protection of the property, as it was impossible to meet the paper falling due. Mr. Orestes Cleveland, the president, makes the following statement: "We had been purchasing Ceylon plumbago of the firm in large quantities, and gave our paper in payment. Some of this paper is now nearly due, and the firm's assets being in the hands of an assignee, we would not be able to secure an extension of time. So we asked for the appointment of a receiver to protect our interests. We have over 600 hands in our employ, have been constantly increasing our business, and our affairs were never so prosperous. We can secure through our receiver the extension of time on our paper, which we could easily have secured from the firm if it had not failed. Work at our factory and mines will not be stopped, the difficulty being temporary. The company was organized in 1868, with a cash capital of $750,000. The officers, besides myself, are John A. Walker, secretary, and William A. Brown, treasurer."

Mr. Cleveland is largely interested in the business. The suspension is generally considered but temporary; meanwhile the receiver, Mr. E. F. C. Young, president of the First National Bank of Jersey City, will proceed with the discharge of his duties, the chancellor having issued an injunction restraining the company from doing further business in its own name, until a further order from the court. Otherwise the arrangements are as usual and unchanged.

The local manager in New York, in charge of the Reade street office and warehouse, enlarged somewhat on the brief statement already made by the president, remarking to *The Iron Age* reporter that the business of the Crucible Company was solid and prosperous, leaving out of view outside accomodations and complications of which he had no knowledge. He thought its present embarrassment would be but temporary, and hoped that under the receivership they would be relieved. The receivership was merely to protect the enterprise. He did not believe more than 30 days would be required for an adjustment. As to other matters he had no information. The Joseph Dixon Crucible Company is doing a much larger business than it was a year ago, and its paper would have sold at any time up to the present week at 2 per cent. The concern had been doing a prosperous business for the last 53 years, and would have been as sound to-day as the Bank of England, but for outside operations.

One of the stockholders of the Crucible Company spoke of the extensive improvements made by them within the past year at the graphite mines in Ticonderoga, N. Y., requiring a large investment in buildings and machinery. These mines are said to be the most valuable of any in the country. The works in Jersey City have been much improved and enlarged within the last six months, the company having acquired new property. By these means the cost of production has been much reduced, but it is yet too early to realize the benefits except in a small measure. The company had done 20 per cent. more business in the last year than ever before. They had needed capital, but instead of issuing more stock, as advised by some, they had raised money by other methods. Respecting business, they had sold more goods and made more money than in any previous year. The liabilities are estimated at $1,000,000 and the assets about the same.

Iron, in an elaborate article on the English steel trade, makes the following estimate of the production of Bessemer and open-hearth steel for the year 1880:

	1879.	1880.
Sheffield	210,346	400,000
South Wales	252,573	300,000
Lancashire and Cumberland	279,293	400,000
Cleveland	85,299	200,000
Staffordshire	7,200	.....
Total	834,711	1,300,000
Open-hearth steel	175,000	250,000
Total	1,009,711	1,550,000

In the course of its argument it contrasts the fact that the 114 converters in England possess such a small capacity, when that of the American works is so great. The following passage will seem curious, in view of the fact that our works have reached a production of 3000 tons per pair of converters per week: A few years ago, in the last burst of prosperity, the American steel manufacturers were considered to be working with a kind of miraculous power when they turned out 500 tons of ingots per week out of a pair of vessels. Now that rate is common enough in this country in times when there is no pressing inducement to increase speed.

The Potts Nickel Plating Solution.

Mr. Joseph H. Potts, No. 2638 Fairhill street, Philadelphia, Pa., has issued the following circular, which may be of interest to the trade:

TO USERS OF NICKEL SOLUTIONS.—I have tested a number of patented solutions advertised, and found they contained ammonia in some form or other. A simple test for ammonia in a solution is powdered lime. Sfir the lime freely in a portion of the solution and your nose will detect ammonia by its peculiar odor. I advise all to apply this test.

My plating solution is a new compound, and different from any solution heretofore used. It is not an experiment. It has, in one shop this year, plated nearly 200,000 pounds of cast iron, brass, and other metals, and its plating qualities have improved with use. For proof of this I refer to Enterprise Manufacturing Company, of Pennsylvania, located at Third and Dauphin streets, Philadelphia, Pa.

In the preparation and use, my plating solution requires less care than any other, and is superior to any solution containing ammonia. It deposits the metal with a beautiful metallic color. It is an impossibility to burn the work with a hard crystallized deposit of nickel, as sometimes happens with all ammonia solutions. It works well with the rolled nickel anodes, now becoming indispensable.

I propose to sell you a shop right to make and use a specific amount of my plating solution, for cash down in preference to selling by the gallon. This plan has the following advantages which it will secure to you:

1. A solution free from ammonia. You can swear to this fact. Can you do so when you buy a solution ready made and do not know the composition of it?

2. It will be cheaper, costing you less. The necessary material can be bought from the well-known nickel manufacturer, Joseph Wharton, whose address is Post Office box 2786, Philadelphia, Pa.

3. You buy the right to use a certain amount, free from all charges for royalty.

4. My patents were secured through an extensively and well-known firm of patent attorneys, who, before proceeding with my case, had the solution made and used in their presence, and it was then analyzed by one of the best chemists in Philadelphia. These precautions were to secure to me, and through me to the public, a solid patent for a reliable solution.

5. As the rolled nickel anodes, though patented by Mr. Wharton, are sold by him without any charge for royalty, and I propose to make no charge for royalty on solution, platers can at last see their way clear to carry on their business without paying tribute to any monopoly. My solution was patented September 28, 1880, through Howson & Son. It is composed of lime, nickel and acetic acid.

Is simple to make, easy to use, and gives a more metallic coating than present solutions; has been in constant use over 10 months.

JOSEPH H. POTTS,
No. 2638 Fairhill street, Philadelphia, Pa.

Hincks & Johnson, Bridgeport, Ct., have patented and are now manufacturing a rubber-headed tack whose uses are multifarious. As an insulator for sewing machines they are largely used by the leading manufacturers, and are easily and quickly applied. For household uses they are placed in the backs of chairs to prevent damage to walls; in the ends and sides of door stops; in rabbets of large folding doors; on lids of pianos; in rabbets of rattling window frames, and, in fact, anywhere to overcome the nuisance of rattling. Car manufacturers use them to deaden noise and avoid abrasion of polished surfaces. Carriage manufacturers apply them to stop the rattling of window frames and doors, and for glass frames to drop upon on the inside of doors. Book manufacturers place them on the corners of large books to protect the binding. In schools, slate frames and rattling desk lids demand them. On billiard cues they are used, and obviate the use of chalk. Indeed, there is hardly any limit to which this useful article may not be applied. They are neatly made and look as if they would give long service in any use for which they are adapted.

The improved French method of preserving wood by the application of lime is said to be found to work well. The plan is to pile the planks in a tank and to put over all a layer of quicklime, which is gradually slaked with water. Timber for mines requires about a week to be thoroughly impregnated, and other wood more or less time, according to its thickness. The material acquires remarkable consistence and hardness, it is stated, on being subjected to this simple process, and the assertion is made that it will never rot. Beechwood prepared in this way for hammers and other tools for iron works is found to acquire the hardness of oak, without parting with any of its well-known elasticity or toughness, and it also lasts longer.

Messrs. Wells, Fargo & Co.'s annual report of the precious metals produced west of the Missouri River, including British Columbia, and the receipts in San Francisco by express from the west coast of Mexico, aggregates: Gold, $33,522,182; silver, $40,005,364; lead, $5,752,390; copper, $898,000. Colorado leads with a total of $21,284,989; California follows with $18,276,166; Nevada, $15,031,166; Utah, $6,450,953; and Arizona, $4,472,471. In comparison with the product for 1879, California shows an increase in gold of $579,579 and a decrease in silver of $360,873. Nevada shows a total falling off of $6,966,093.

A meeting of the trustees of the Markland & Poole Manufacturing Company, of Newark, N. J., will be held at their N. Y. office, No. 44 Center street, on the 11th of January inst., to authorize the increase of their capital stock to $75,000. Calvin Carr, Clement Lockitt, Daniel F. Noyes, and William D. Wines are the trustees.

Cutlery.

FRIEDMANN & LAUTERJUNG,

Manufacturers of

PEN AND POCKET CUTLERY,

Solid Steel Scissors, Shears, Razors, &c.

Sole proprietors of the renowned full concave

"ELECTRIC RAZORS,"

And the celebrated **"ELECTRIC SHEARS."** Nickel Plated Bows.

Agents for the BENGAL RAZORS.

AMERICAN TABLE CUTLERY, BUTCHER KNIVES, &c.

91 Chambers and 73 Reade Sts., N. Y. 423 N. Fifth St., ST. LOUIS, Mo.

MERIDEN CUTLERY COMPANY.

The oldest manufacturers of Table Cutlery in America. Exclusive makers of the CELLULOID HANDLE for Table Cutlery. A most beautiful and perfect substitute for Ivory. Also makers of all kinds of TABLE, BUTCHER AND HUNTING KNIVES. Illustrated catalogues with prices sent to the trade on application. SALESROOM, No. 49 Chambers St., N. Y. Address all communications ro West Meriden, Conn.

THE

LAMSON & GOODNOW MFG. CO.,

Salesroom and Warehouse, 88 Chambers Street, New York City.

Factories, Shelburne Falls, Mass.

Superior Cutlery of all kinds and grades, from the finest in pearl and ivory handles to the lowest price in wood and iron handles.

OUR

BUTCHERS' and HUNTERS' KNIVES

Are warranted to be equal in style, finish and quality, to any goods made in the world.

"COMPARE, THEN JUDGE."

We are the sole owners of the *Gardner Patent Guard and Rest for Carving Forks,* and the manufacture of fine carvers is with us a specialty.

AARON BURKINSHAW, Pepperell, Mass.,

Manufacturer of

PRUNING, BUDDING AND POCKET KNIVES

OF EVERY DESCRIPTION.

My Blades are forged by hand from the best cast steel and warranted. Established 1853.

JOHN WILSON'S CELEBRATED

TRADE MARK.

"FOUR PEPPERCORNS AND A DIAMOND."

GRANTED A D 1766. BY THE CORPORATION OF CUTLERS OF SHEFFIELD AND PROTECTED BY ACT OF PARLIAMENT.

REGISTERED ALSO AT WASHINGTON U.S.A. ACCORDING TO ACT OF CONGRESS.

ALSO AT LEIPZIG, IN ACCORDANCE WITH THE GERMAN TRADE MARKS' REGISTRATION ACT.

BUTCHERS' KNIVES, BUTCHERS' STEELS, AND SHOE KNIVES.

It having come to the knowledge of JOHN WILSON that Counterfeit Butchers' Knives, purporting to be of his manufacture, are being sold in the United States, he hereby cautions all purchasers of his Knives and Steels to be on the alert against such imposition.

JOHN WILSON also hereby gives Notice, that it is his determination to institute Legal Proceedings against any person or persons who may be detected infringing his Trade Mark.

Every article of JOHN WILSON'S manufacture, bears the Trade Mark, in addition to the Name.

WORKS:—SYCAMORE ST., SHEFFIELD, ENGLAND. Established 1750.

Office of

PHŒNIX CASTER CO.,

INDIANAPOLIS, IND.

The Simmons Hardware Co., of St. Louis, Mo., bought of us Martin's Patent Caster, as follows:

1878	$151.89
1879	479.94
1880	650 70

Your trade will increase in them in the same proportion.

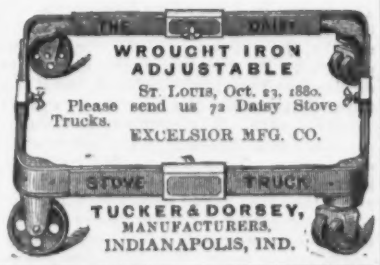
The Hardware trade desires an Improved Caster. We have it. Will be pleased to execute your sample order.

PHOENIX CASTER CO.,

Manufacturers,

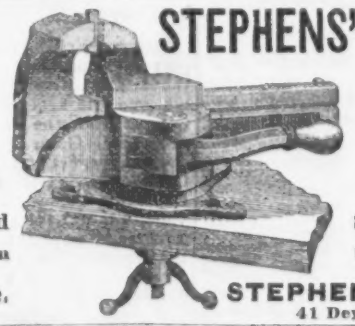
INDIANAPOLIS, IND.

We make Till either for Coin or Script.



STEPHENS'

PAT. VISE.



Stationary and Swivel Bottoms.

The Best in the Market.

For Sale by the Trade.

STEPHENS PAT. VISE CO.

41 Dey Street New York.

CHAMPION **HOG RINGER** RINGS and HOLDER.

Only double Ring ever invented. The only Ring that will effectually keep Hogs from rooting. No sharp points in the nose.

EAGLE BILL **CORN HUSKER** is the best Husker in the market. Farmers say it is the best. Use no other.

BROWN'S **HOG AND PIG** RINGER and RINGS.

Only single Ring in the market that closes on the outside of the nose. No sharp points in the nose to keep it sore.

Ringers, 75c. Rings, 40c. 100. Holders, 75c. Huskers, 150.

CHAMBERS, BERING & QUINLAN, Exclusive Manufacturers, Decatur, Ill.

Cutlery.

ALFRED H. HILDICK,

12 Warren St., N. Y.,

Importer of **CHAINS, ANVILS, VISES, &c.**

Agency of

HILL BROTHERS & CO., WALSALL, ENGLAND

GENERAL HARDWARE MERCHANTS,

And of

BALL'S PAT. SOLID STEEL SHEEP SHEARS.

These shears are unsurpassed for cheapness, durability and utility. They are made of one solid piece of steel from point to point, and cannot be broken in use either in the bow or at the junction of the shank and blade. Samples can be seen at above address, or sample lots furnished.

CORPORATE MARK,

Joseph Rodgers & Sons'

(LIMITED)

CELEBRATED CUTLERY,

No. 82 Chambers Street, New York.

F. & W. CLATWORTHY, Agents.

The demand for **Joseph Rodgers & Sons'** productions having considerably increased, they have, in order to meet it, greatly extended their Manufacturing Premises and Steam power.

To distinguish Articles of **Joseph Rodgers & Sons'** Manufacture, please to see that they bear their Corporate Mark.

P. O. Box 3762.

ESTABLISHED 1836.

Alfred Field & Co.,

COMMISSION MERCHANTS,

New York, Birmingham, Sheffield, Liverpool.

Guns and Pocket Cutlery,

SPECIALTIES.

Headquarters for

ELEYS BROS.' GOODS, WRIGHT'S ANVILS,
WILSON'S BUTCHER KNIVES, &c.
WOSTENHOLM'S POCKET CUTLERY AND RAZORS,
FIELD, FRASER & CONTINENTAL POCKET KNIVES,
BUTCHER'S FILES, TOOLS AND RAZORS,
JOSEPH ELLIOTT'S CELEBRATED RAZORS,
WESTERN FILE CO.'S FILES,
ENGLISH AND GERMAN GUNS,
ROBERT SORBY & SONS' SHEEP SHEARS,
STUBS' FILES, WESTERN FILES,
GREAVES' SHEEP SHEARS,
CHESTERMAN'S TAPES,
GERMAN COIL AND HALTERS and other CHAINS,
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Etc., Etc., Etc., Etc.

All sorts of Hardware and Merchandise for import and export purchased on commission.

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Kangaroo Sheep Shears,

The best Shears made.

Every Shears Guaranteed.

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SOLE AGENTS.

Send for price list and terms.

CLOTHES WRINGERS.

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(GREENFIELD CUTLERY CO.)

Greenfield, Mass., U. S. A.,

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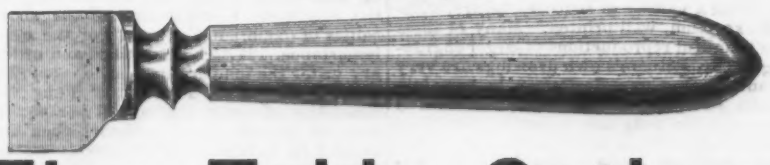

Fine Table Cutlery.

Solid Handled, Bone, Ivory, Rubber and Wood, Solid Steel Silver Plated.

PATENT CONCAVE FORGED OX SHOES.

Also, FLAT SHOES with TWO CALKS at same price.

ALSO,

PLANES, PLANE IRONS, &c.

Cutlery.

French Clippers

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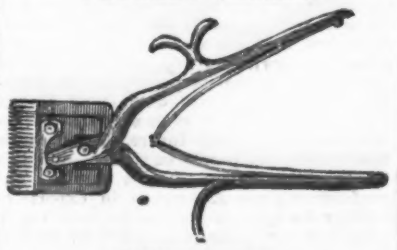

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We are sole agents for these Clippers. All orders should be addressed to us to obtain lowest prices.

McCOY & SANDERS,

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Silver Medal, 1878—Paris.

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Table Knives, Razors, Shovels, &c., &c., of every description.

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SPENCER SHEFFIELD

Granted 1749.

Can be obtained only from the patentee, PAUL METZ, 31 Upper Thames st., London, E. C., to whom cutlery manufacturers who wish to buy the American patent of this startling novelty should apply at once.

FURNESS, BANNISTER & CO.,

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Manufacturers of

TABLE CUTLERY.

PRICES FURNISHED ON APPLICATION.

TELESCOPE TUBES.

Fine Mandrel-drawn Tubes, from Brass or German Silver. Tubes for sliding one within the other made to order. Manufactured by ROBT. T. DEAKIN & CO., 500 N. 12th St., Philadelphia, makers of the American Improved Brass Garden Syringe

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Established in 1839.

A. G. COES & CO.

WORCESTER, MASS.,

Successors to

L. & A. G. Coes,

Manufacturers of

THE GENUINE

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Screw Wrenches.

PATENTED,

May 2, 1871.

December 26, 1871.

December 28, 1875.

August 1, 1876.

The backstrain when the wrench is used is borne by the bar—not by the handle.

The strongest Wrench made, and the only successful Re-enforced Bar.

None genuine unless stamped

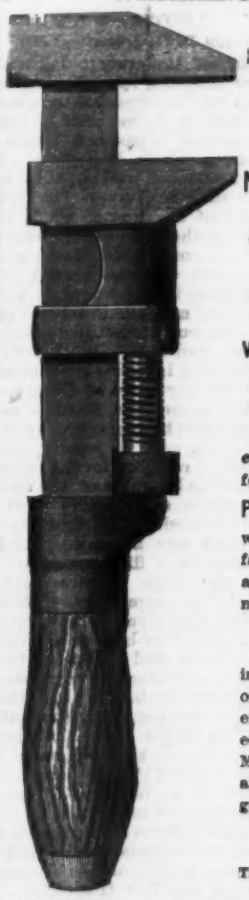
A. G. COES & CO.,

Our Agents, GRAHAM & HAINES, 113 Chambers St., New York, carry a full line of our goods, and will be pleased to serve you at factory prices.

TRADE MARK.

STANDARD GIRARD WRENCH.

WARRANTED.



FOR **STRENGTH** AND **Durability**

IT HAS

NO SUPERIOR.

GUARANTEED IN EVERY RESPECT.

Wrought Bar, Head and Screw.

Owing to the ***increased demand*** for these justly

Popular Wrenches,

we are now manufacturing more than any other establishment in the world.

Our Wrench having been imitated by other manufacturers, we have adopted the above Trade Mark, and will hereafter stamp all our goods.

SEND FOR TERMS and PRICES.

GIRARD WRENCH MFG. CO., Girard, Pa.

"DRAW CUT"

BUTCHERS' MACHINES.

Choppers, Hand and Power

Stuffers,

Lard Presses.

Warranted thoroughly made and the BEST IN USE.

MURRAY IRON WORKS, Burlington, Iowa.

GEO. M. EDDY & CO.,

Manufacturers of

Measuring Tapes

Of Cotton, Linen & Steel.

FOR ALL PURPOSES.

351 to 353 Classon Ave., Brooklyn, N. Y.

CHAS. E. LITTLE,

59 Fulton St., New York,

Pump-Log and Tubing Augers and Fittings,

And Agent for

Barnes' Wood-Working Machinery and Lathes.

Clements' Steam Band Saw.

Kimball's Foot-Power Band Saw.

Annual Review of the Metal Market for 1880.

On taking a general review of the course of the metal markets in 1880, it should be remembered that business in Europe, although it took such a favorable turn in October, 1879, was interrupted by an unusually long and severe winter, and that the crops in 1879 and 1878 had been bad. Under these circumstances Europe was hardly in a position favorable enough to resume the revival in trade started during the preceding fall, and indorse the advance in prices which speculation had fostered in such an extravagant manner. This seemed, indeed, evident enough to the cool observer, yet the speculative element was again on hand as soon as the new year had been ushered into existence. During the past two months of the year success seemed to attend this renewed onset, and prices of most goods, including metals, fully recovered the extreme rates of the previous autumn. On this side the markets at first responded freely, but when merchants here discovered that Europe expected the United States to take the bulk of goods, they at once came to the conclusion that this second edition of a "boom" was bound to prove a disappointment. As we have shown, Europe was indeed ill-prepared to back an upward movement, and as we certainly had been importing for some six or eight months unusually large amounts of goods of all kinds, a reaction and material recoil was at hand. The two leading metals—Copper and Tin—did not escape these influences of a general kind; Lead felt them comparatively less, but Speiter even more so. Later on special causes militated in favor of Tin at least, but although the general commercial status gradually improved in Europe in consequence of more abundant crops, except in Germany and Russia, the remaining metals did not recover values ruling early in the year.

With the exception of Tin, speculation has during the remainder of the year meddled very little with Metals, in spite of the ease in money matters in Europe, and notwithstanding the absence of threatening political questions. Consumption has thus remained unhampered by high prices and violent fluctuations, and has no doubt made good progress, thus making headway against the large production going on unabated. The general business outlook on both sides the Atlantic is now more promising than it was a year since. The European countries whose harvests have been average ones, are large consumers of all sorts of goods, including Metals, while the abundant crops here, and comparatively high prices which they command in every department, hold out promise of continued prosperity which cannot fail to benefit the Metal trade, and enhance its consumptive capacity.

COURSE OF PRICES AT NEW YORK.—CENTS PER POUND.—IN GOLD.

	July 1, 1873.	Jan. 1, 1879.	Nov. 1, 1879.	Dec. 29, 1880.
Lake Copper.....	24⅞	16	21⅛	19¼
Straits Tin	31⅞	14⅜	24¼	19⅜
Domestic Lead..	6½	4	5	4⅝
Spelter.....	7¾	4⅜	6⅜	4⅞
Antimony.....	13¾	12	18⅛	15⅛
Coke Tin, pr bx	$9.62½	$5.12½	$7.50	$5.00

Closing prices of Metals, it will be seen, are certainly moderate and considerably lower than they were a year since. This is decidedly encouraging to the consumer, and prepares a good spring demand.

Copper.

The rise in Copper and other metals which culminated in October, 1879, was vigorously renewed early in 1880 on both sides the Atlantic. Although consumers bought to a fair extent, the movement was speculative, especially in the English markets, operators coming forward boldly despite the unfavorable statistical position in England and France. Opening at £67, Chili Bars were thus in the course of the month of January pushed to £75, the closing figure. Aggregate sales of Lake Superior at New York reached, in January, some 2,500,000 lb, prices rising by degrees from 21⅜¢ to 25¢. February, on the contrary, proved a rather quiet month, both in Europe and here, manufacturers only purchasing from hand to mouth, while speculators for a rise kept aloof. The result was a feeling of weakness, which only disappeared, at least so far as futures were concerned, toward the end of the month. Sales effected in February were confined to some 1,500,000 lb Lake Copper, the price of which opened at 25¢ and gradually gave way to 24¼¢, the closing figure, for immediate delivery, while futures remained 25¢ @ 25¢. According to statistics drawn up at the time, the Lake Superior region produced in 1879 some 40,000,000 lb of Copper, and other portions of the United States 6,000,000 lb, while consumption absorbed 42,000,000 lb and export 11,000,000 lb. The visible supply to June 1, on this side, early in the year, was therefore moderate, indeed, contrary to what the European statistical position disclosed. In April the disappointment which the month of March had spread among European holders who saw Chili Bars give way gradually to £66 on March 31, under a visible supply of 63,951 tons, was intensified and assisted in depressing the market on this side, so much so that, with sales not exceeding 900,000 lb, the price of Lake Copper ranged considerably lower, declining to 22¢, and, finally, to 21¢. Manufacturers drew their supplies from producers direct, much to the disappointment of speculative holders whose offers precipitated the decline. From Europe news reached us that German production in 1879 had been 12 % greater than in 1878, while Spain turned out some 20,000 tons more; on the other hand, Chili, 7000 tons less. The latter, it was shown, turned out 43,000 tons in 1879; Spain, 25,000, and Germany, 10,000. The impression began to prevail in Europe that Spanish production, if further developed, would tend to prevent, for a long time to come, a recovery of Copper values. This feeling, no doubt, powerfully contributed to check speculative operations in the London market, and Chili Bars opened in May at £61, in order to gradually decline to £55 @ £56: while in the New York market the apathy was, if possible, rendered worse by a summer heat of unusual intensity. With sales limited to about 900,000 lb, Lake Superior Copper gave way from 21¢, early in May, to 18¢, at its close. In June the speculative element in London deemed the moment opportune to once more vigorously take in hand this down-trodden metal, and Chili Bars were made to recover, in the course of the month, from £55. 10/ to £66, a movement important enough to meet with sympathy in our market. From 18½¢, early in June, Lake Copper was thus, by degrees, pushed to 19¼¢, the closing figure, sales aggregating 1,100,000 lb. When the mails from Europe came to hand it was shown that solid capitalists there had largely participated in Copper purchases, deeming the temporary decline exaggerated, notwithstanding the statistical position. At any rate, the rebound, despite the co-operation of powerful parties, appeared rather too sudden and extreme. July was, as usual, a dull month, sales being confined to 1,000,000 lb Lake Superior at 18¾¢ @ 19¢, manufacturers not buying beyond more immediate requirements, a few resales sufficing to supply them. Toward the close of the month these offers ceased, stray lots being exhausted, producers remaining the sole holders, little inclined to go on at current rates. Hence, the market wound up in good position, and, as the outlook for fall became promising, a confident feeling began to spread, while in Europe a reaction from the June excitement carried back Chili Bars to £61. The month of August thus found consumers ready to operate more extensively, and 6,500,000 lb Lake Superior met with purchasers at 19¢, the month closing quiet, but firm, at 19⅛¢ @ 19¼¢. Returns from Treasury Department showed that the export of Lake Copper and Cartridges had been unusually light. In Europe the statistical position grew worse, the visible supply being on Aug. 1, 65,000 tons, against 61,447 in 1879, and 52,099 in 1878. This did not, however, prevent Chili Bars from recovering from £61 to £62. 10/. In September the dealings in our market were of little importance, being restricted to 500,000 lb Lake Copper at 18¾¢ @ 19¢, which price ranged throughout the month. Official statistics showed that while from Jan. 1 to Aug. 1 there had been an importation of 4,000,000 lb, we had exported hardly anything against 11,000,000 lb thus disposed of during the corresponding period of the previous year, thus reversing, so to say, our foreign trade, a circumstance not calculated to encourage the re-establishment of higher prices. In other words the metal, if not as badly situated on this side as in Europe, failed to inspire our metal trade with much confidence. The dull feeling thus deepened in October, and sales were confined to 500,000 lb at 18⅝¢ @ 18¾¢, which was at the same time the closing figure. The only redeeming feature in Copper becoming apparent at this time came from Chili, where shipments to Europe had fallen somewhat behind the previous year's charters, partly in consequence perhaps of diminished production and partly due to the violent fluctuations in exchange at Valparaiso, during and subsequent to peace negotiations unsuccessfully carried on during the month under the auspices of our government. It became evident that a continuation of the war on the West Coast would in the long run interfere with Copper production in Chili by drafting part of the mining population into the army. In November there was again witnessed at New York an excessively dull Copper market, sales not exceeding 750,000 lb Lake. Much greater firmness was exhibited on the part of holders, the small speculative lots having been swept from the market by degrees, placing producers in more undisputed command of it, and enabling them to firmly establish the price of 18⅞¢ @ 19¢. Moreover, it became evident that domestic consumption during the year must have been large indeed, if without material speculative assistance and without exportation to speak of prices had been so remarkably well sustained during the fall, and all the way into the winter months. Producers, therefore, under the circumstances had every reason to be satisfied with the course of prices. Similar influences seem to have been at work in Europe, for Chili Bars during all the month of November hardly varied from £62. In December, the market at New York gradually got into better shape, after it was shown that in the course of the last two or three months there had been secured by consumers, partly on the spot and mostly to arrive, some 10,000,000 to 12,000,000 lb of Copper. The price for Lake Superior Copper most of the time ruled between 19¢ and 19⅛¢, the closing price being 19⅛¢ @ 19¼¢. The shipments from the Lake region were stated to have been 23,961,448 lb Copper and 17,622,545 lb mineral, of which the Calumet and Hecla mine alone shipped 14 320,781 lb Copper and 8,194,835 lb of mineral. Chili Bars closed at £61. 10/. The following tables show developments in England and France. The position from Dec. 1, 1879, to Dec. 1, 1880, was as follows:

	Price. Chili bars.	Stock on hand. Tons.	Visible supply. Tons.
1879—Dec. 1.....	£66 10 0	41,115	53,165
1880—Jan. 1.....	66 0 0	42,119	54,119
Feb. 1.....	73 10 0	37,997	51,809
March 1.....	71 0 0	38,000	50,260
April 1.....	65 10 0	42,065	54,944
May 1.....	60 0 0	42,744	54,669
June 1.....	56 0 0	42,078	54,608
July 1.....	60 0 0	45,445	55,570
Aug. 1.....	61 0 0	44,390	56,042
Sept. 1.....	61 5 0	43,876	55,329
Oct. 1.....	60 5 0	46,055	54,679
Nov. 1.....	61 0 0	45,804	53,879
Dec. 1	61 10 0	46,701	55,015

And the comparative positions at the same date of the past four years with the present:

	Price. Chili bars.	Stock on hand. Tons.	Visible supply. Tons.
1876—Dec. 1.....	£76 0 0	25,802	31,623
1877—Dec. 1.....	63 10 0	30,701	36,861
1878—Dec. 1.....	59 0 0	39,008	47,073
1879—Dec. 1.....	66 10 0	41,115	53,165
1880—Dec. 1	61 10 0	46,701	55,015

Charters at Valparaiso to Nov. 30, 1880, were 37,700 tons, against 47,300 tons in 1879.

VALUE OF INGOT COPPER AT NEW YORK IN CURRENCY —CENTS PER POUND

	1874.	1875.	1876.	1877.	1878.	1879.	1880
January	26	23⅛	23	19⅜	17⅛	15⅛	21⅜
February	25	22	22¼	19	17¼	15½	25
March	24½	21½	22½	19⅜	17⅛	15¾	24¼
April	25	22½	22¼	18⅜	17	16	21
May	25	23	20	19¼	16¾	16⅝	18
June	24¾	23	20¼	19¼	16⅜	16¼	19¼
July	24	23	20¼	19⅜	16⅛	16⅛	18⅞
August	21	23⅛	19½	18	16⅜	16¼	19⅛
September	21⅛	23⅛	20⅜	18	16⅛	17¾	18⅞
October	22¼	23¼	21	17⅜	16	21	18¾
November	23¾	23½	20¼	17¾	15¾	21½	19
December	23¾	25¼	20	17⅜	15⅞	21½	19⅛

Tin.

The unexpectedly large quantity of Tin absorbed in the United States in 1879, some 8000 tons, powerfully contributed to revive early in the year speculation for a rise both in Europe and on this side, the more so as there was every indication in January that this American consumption would not soon abate. The consequence was a decidedly upward tendency from the very commencement in this market, notwithstanding the liberal arrivals of 47,149 slabs in all the month. Straits Tin was thus carried from 21½¢ @ 24¾¢ here, and from £92 @ £100 in London. In February less favorable views began to prevail, and a feeling of indifference soon pervaded the markets, precipitating a slow, but uninterrupted decline. At ruling high prices consumers were by no means inclined to anticipate their wants, and as they were sufficiently stocked for the moment, speculators were left to sustain rates single handed at a range of value little justified by the real position of the metal. Actual arivals were limited to some 250 tons, but the cable announced large shipments this way from the Straits which would drop into our dull season, a prospect by no means encouraging. The consequence of this state of affairs was a gradual weakening and a return from 24¢ at the opening in February, to 23¼¢ at the close. London, meanwhile, gave way from £98 @ £93 with Straits Tin. During the first two months of the year the statistical position of Tin in the United States had shaped as follows: Stocks here and in Boston, January 1, 1880, were estimated at 2500 tons; the receipts in January and February were about 52,000 slabs Straits, 14,000 ingots Australian and 18,000 slabs Billiton, footing up, together with some English and Banca imports, about 4500 tons, and constituting a joint supply of 7000 tons; while a very liberal estimate placed the consumption in January and February at, altogether, 2000 tons, leaving, on March 1, an available stock of 5000 tons, and adding thereto the amounts afloat, the visible supply actually reached some 8500 tons. At the same time, it was learned that production in Tasmania was developing on a very liberal scale, and that 1000 tons Australian Tin, believed to have gone into consumption on the Continent, had been returned to London, all of which impressed most unfavorably not only the London and Dutch markets, but also our own, so much so that a gradual decline set in simultaneously on both sides, carrying London back from £93 to £86, and New York from 22½¢ to 20½¢. Sales here did not exceed, in all March, 400 tons, while the March shipments from the Straits alone this way amounted to 500 tons. These facts caused great demoralization in our market in April, stocks accumulating in store all the time, so that Straits Tin receded, in the course of the month, from 20½¢ to 18¼¢. The total arrivals summed up some 50,000 slabs, while sales did not exceed 400 tons. May opened with a depressed feeling, particularly also in Europe, caused there not so much by the statistical position—which, instead of getting worse, was, on the contrary, improving—but by a general decline in metals, affecting Tin with the rest. For a few days Tin resisted this indirect influence in the London market, and kept fluctuating between £84 and £77, but it finally gave way and dropped to £76, when it became known there that we had dropped from 18¼¢ to 16¢ with Straits, and that Billiton had been forced off as low as 15¢. The arrivals here figured up in May to some 18,000 slabs and the sales about 300 tons. Both the European and American markets were now evidently ripe for a vigorous rebound from a reaction which had evidently been carrying the price of Tin below its intrinsic value. During the fore part of June a speculative movement was, consequently, set on foot in Boston, which, when it became known, at first created a good deal of confusion and irregularity in the market. Straits Tin for a moment had dropped at New York to 15¢, and immediately rebounded to 15¾¢, being carried, in the course of the month, to 18¢ @ 18½¢, while London, upon this news, recovered, in less time even, £15 ₮ ton. In June, when this movement was inaugurated, the visible supply on this side was still 4640 tons, the arrivals during May having been 1300 tons. Sales in June amounted to 1000 tons and 100 tons were returned to Europe. In spite of the summer dullness of July there was no relaxation in speculation in Tin on both sides, London advancing in the course of the month another £10, and New York from 18¾¢ @ 21¾¢, some 1500 tons changing hands in this market. The general advance in Tin of 40% since the middle of June, however, created a feeling of great caution among consumers, and to a notable degree affected their takings; this, however, did not prevent the metal from closing with considerable firmness for the month. Hesitation on the part of consumers to take hold rather increased in August. Opening at 21¾¢, the price thus weakened during the month and closed at 21¢. Estimates of consumption were reduced for the month from 1200 tons to 1000, and even this was deemed too large. Deliveries in England and Holland during the first 7 months were put at 11,700 tons, against 12,230 tons during the corresponding period of the previous year, but the statistical position there was favorable enough to uphold the advance established. Still it became evident that the recovery of a remunerative price would attract shipments in increasing quantities both to Europe and America, and that nothing would sustain prices except large deliveries in the fall or another resort to speculative upholstering. Under the prevalence of this sentiment consumers only operated in all September from hand-to-mouth, while speculators withdrew for the moment altogether, causing weakness and a revival from 20¾¢ at the opening to 20¢ at the close. In London and Holland a similar feeling ruled the markets. It was shown that the United States had imported during the first 7 months no less than 9533 tons of Tin, against 4776 tons during the same time in 1879. While importation had thus doubled, the average monthly consumption for this period was estimated not to have exceeded 1362 tons. News from Australia announced at the same time a vigorous resumption of production at the antipodes. The stock at the commencement of September on this coast proved to be 1800 tons, with 1900 tons afloat. In October it was shown that during the first 8 months we had imported 10,206 tons of Tin, against 7585 in 1879; our supply had therefore been about 1200 tons per month, the maximum of estimated consumption. Sales in October not going beyond 1000 tons at 19¾¢ @ 20¼¢, the market, in the absence of all redeeming features on this side, became quite flat and closed at 19¾¢. The presidential election at the same time approaching, little interest began to be felt in the metal. In Europe, on the contrary, activity was kept up and seemed to prepare a speedy revival even in speculation for a rise. In November, Europe, indeed, launched out again and did not fail to electrify the American markets likewise, causing to be done a large business here, some 2000 tons changing hands at 19¾¢ @ 21¼¢. In December the speculation for a rise in Tin seemed to have spent itself, and the price gradually receded from 21⅜¢ to 19¼¢; in England to £91. Straits on the other side showed the following results for 11 months:

	During first 11 mos. 1880.	1879.
Shipments from Straits to London, tons	2,155	3,230
Shipments from Australia to London, tons	6,948	6,781
Deliveries of tin in London, tons	12,092	12,361
Deliveries of tin in London and Holland, tons	19,210	19,732

PRICES OF BANCA TIN IN HOLLAND SINCE 1872, IN GUILDERS, PER 50 KILOS.

	1873	1874	1875	1876	1877	1878	1879	1880.
Jan.	85½	70	57¼	50	45	40¼	38½	54¾
Feb.	87½	70	56¾	50½	43½	40	36¾	58¼
Mar.	84	62	54	50¾	43¾	40½	40	55½
April 1	87	53	51½	50	42¾	40	43	52¾
May	84	57	50¾	49	42½	39½	40¾	50¾
June	80	58½	50	45½	42½	39½	39½	43½
July	83¼	60	50¾	46¾	42½	39¾	39	49
Aug.	79¾	56¾	48¾	44	41¾	39½	38½	56
Sept.	79	57	51	43	40½	37¾	41¾	54½
Oct.	74½	56½	52¾	42½	40¾	35¾	45	52
Nov.	72½	58	52¾	44½	43	37¾	57	54½
Dec.	67½	58½	51	44¾	41⅛	39	56	56½

The following shows the course of prices at New York:

STRAITS TIN.

Sept.	'78..13⅛¢ @ 13⅛¢	Nov.	'79..22 ¢ @ 24 ¢
Oct.	'78..13⅛¢ @ 15⅛¢	Dec.	'79..20 ¢ @ 22 ¢
Nov.	'78..15¾¢ @ 17 ¢	Jan.	'80..21 ¢ @ 25 ¢
Dec.	'78..15 ¢ @ 16 ¢	Feb.	'80..23¾¢ @ 24¾¢
Jan.	'79..14 ¢ @ 14½¢	Mar.	'80..21¾¢ @ 22¾¢
Feb.	'79..14¾¢ @ 15 ¢	April,	'80..18¾¢ @ 21¾¢
Mar.	'79..14¾¢ @ 15⅜¢	May,	'80..16 ¢ @ 18 ¢
April,	'79..14⅛¢ @ 15 ¢	June,	'80..15¾¢ @ 18⅜¢
May,	'79..14⅛¢ @ 14⅝¢	July,	'80..18⅜¢ @ 20¾¢
June,	'79..14⅝¢ @ 15⅜¢	Aug.	'80..20⅝¢ @ 21⅛¢
July.	'79..14⅝¢ @ 14⅞¢	Sept.	'80..19⅞¢ @ 20¾¢
Aug.	'79..14⅝¢ @ 16 ¢	Oct.	'80..19¾¢ @ 20 ¢
Sept.	'79..15¾¢ @ 17⅝¢	Nov.	'80..20¾¢ @ 21¾¢
Oct.	'79..18¾¢ @ 26 ¢	Dec.	'80..19¾¢ @ 21¾¢

Lead.

The month of January found our Lead market in an unexcited condition, being but moderately active at 6¢ @ 6⅛¢, Common Domestic sales summing up 2000 tons, for the most part at 6¢. Some arrivals from England and Spain were placed without difficulty, some more still being expected. An advancing market in Europe lent support to holders here. Although in February sales were restricted to 600 tons at $5.95 @ $6, a firm feeling prevailed, the general opinion being that the approaching spring trade would prove an active one in this metal, and that the large consumption in 1879 would be fully kept up. March opened with an unusally light stock here of only about 702 tons, against 8000 tons the year before, but some foreign Lead being offered early in the month as low as $5.80, great irregularity seized upon the market, some 1500 tons of Common Domestic selling from $5.95 down to 5½¢, at which it closed. News reached us from Spain that, in consequence of more remunerative prices ruling, production had begun to expand considerably in that quarter. In April accounts were received from London to the effect that a syndicate had been formed for the purpose of upholding the price of the metal on the other side, and the market here was stirred up somewhat from its apathy. The stronger feeling thus engendered was doomed, however, to be but short lived, for soon after the cable informed us that the speculation had not been set on foot, the proposed syndicate not having come to an agreement. This failure to support prices on the other side had a demoralizing effect here, the more so as the consumptive demand proved to be feeble. The fact is that at this time Spanish production was statiscally shown to have been 80,000 tons in 1879, being 10,000 tons in excess of 1878, and that of Germany 73,000 tons, being 3 % greater than in 1878. Sales for the month here were limited to 1200 tons from 5¾¢ down to $5.45. The spring trade in this country had not come up to expectations, and the prospect ahead was not of the brightest; the month, therefore, closed with considerable weakness. This dull feeling continued during May, carrying down the price from $5.15 to 4¾¢, notwithstanding the scarcity of ore and high price of it reported from Leadville. Aggregate sales in May in this market did not exceed 500 tons, in small lots. In June, news reached us of the labor difficulties at Leadville, and as the stock here was only 2500 tons, against 4000 tons in January, after importing some 2000 tons, more favorable views were entertained and greater firmness was exhibited by holders. Although sales in June were restricted to 500 tons at 4½¢ @ 4¾¢, the closing price was slightly better, being 4¾¢ @ 5¢. The month of July fully justified expectations of an increasing trade, leading as it did to sales of together some 1500 to 2000 tons at 4½¢, unaccompanied by excitement and speculation. Opening at 4¾¢, the demand increased as soon as concessions were made, consumers resolutely taking hold of the metal at the decline, preferring to lay in supplies during a quiet month rather than run the chance of having to pay more in an active one. While this happened here, producers in the interior did not press their Lead for sale, the entire aspect thus becoming an eminently sound and reassuring one, without holding out prospects of any very extraordinary advance. August fulfilled all that had been expected of it in the way of liveliness, leading to sales of 2500 tons Common and 1000 tons Refined Lead. First sales during the month had been effected at 4¼¢, but as the demand developed a gradual appreciation took place, raising the price toward the close to 5¢. The market meanwhile remained unexcited, and the dealings thus betokened great soundness, leading to the best hopes for the remainder of the campaign. While this was the case on this side, the European aspect also improved, recovering from the late prostration. Confidence was thus restored on both sides the Atlantic, without the intervention of the speculative element usually so precarious in this particular metal. September did not distinguish itself by much activity, sales being confined to 1500 tons of Common Lead, but the market, nevertheless, maintained its firmness, principal holders persevering in their attitude of stiffness and confidence. Prices varied very little from 4⅞¢, which was also the closing figure. Refined remained inactive, but as White Lead manufacturers were known to be lightly stocked, and, therefore, likely soon to resume purchases on a more extensive scale, prices remained well supported. In October holders of Common Lead deemed it more prudent to meet the market unhesitatingly and make liberal concessions. This provoked an active demand on the part of consumers, who were thus able to secure some 3000 tons in the course of the month, at $4.65 the greater portion of it. Toward the close of month the price recovered to 4¾¢. It was evident that at this range of value consumption was able to expand satisfactorily, and as the season was too far advanced to encourage any attempt at speculation, there was every appearance that we should reach the end of the campaign without undue fluctuation. Lead producers thus had the satisfaction of perceiving, when November was at hand, that throughout the year consumption had developed freely at rates acceptable to both parties, while allowing production to expand unhampered at its ordinary rate of progress. There had been no interference on the part of speculation, and violent fluctuations, so detrimental to legitimate trade, had been avoided. Sales in November were restricted to 1500 tons at $4.80 @ $4.85, but leaving, nevertheless, but comparatively light stocks at the seaports. In December the market became excessively dull and developed great weakness, the absence of demand carrying down the price by degrees from 4¾¢ @ 4¼¢ for Common Domestic, closing at the latter figure.

PRICE OF COMMON DOMESTIC LEAD AT NEW YORK.—CENTS PER POUND.

	1877.	1878.	1879.	1880.
January	6¼	4½	4¼	6
February	6⅜	3⅝	4⅜	6
March	6⅜	3¾	4	5½
April	6½	3¾	3	5⅝
May	5¾	3½	3	4¾
June	5⅝	3½	3¼	4⅝
July	5⅝	3½	4	4½
August	5	3⅜	4⅛	4¼
September	4¾	3⅜	4	4⅜
October	4⅜	3½	5¼	4⅝
November	4¼	3⅜	5½	4¾
December	4½	4	5¾	4¼

Spelter.

This metal has been unfavorably situated throughout the year. At first an attempt was made in Europe to control it by means of a combination of leading producers, but when these perceived that early in spring all metals displayed great weakness through the disappointment of speculators, who had in vain attempted, in January and February, to inaugurate a general advance, they abandoned the idea of artificially upholding the metal in the face of an exuberant production which consumption could hardly cope with. Spelter had thus been placed in an unfavorable position from the very commencement in Europe. While the year advanced, it was seen that the consumptive demand on the Continent did not come up to even moderate expectations, while production, especially in Silesia, was larger than ever. To this must be added an unfavorable change in commercial relations between Prussian Silesia and Russia, the latter country ceasing, in consequenee of high protective duties, to take Silesian Sheet Zinc, which it was wont to draw largely from that part of Germany. While this was the case, Spelter and Zinc production developed in Poland, and Germany thus lost at one blow an important customer, as nowhere else in Europe the output of Spelter received the least check. It was bound to decline in value still further, unless speculation came to the rescue, which has not been the case. Our own market did not, of course, escape these untoward influences, and the result has been a dreary state of affairs here, which it is painful to follow in its uninteresting details. We, therefore, merely place on record the course of prices as compared with former years:

LOWEST AND HIGHEST PRICE OF COMMON SPELTER.—CENTS PER POUND.

	1878.	1879.	1880.
January	5⅝ @ 6	4¾ @ 4½	6 @ 6¼
February	5⅜ @ 5⅝	4⅜ @ 5	6½ @ 7
March	5⅜ @ 5¾	4½ @ 4¾	6⅜ @ 7
April	5½ @ 5⅜	4⅜ @ 4¾	6¼ @ 7
May	4¾ @ 5⅜	4½ @ 4¾	5⅜ @ 6¼
June	4½ @ 5	4⅜ @ 4⅝	5 @ 5¾
July	4.55 @ 5	4½ @ 4⅞	5 @ 5¼
August	4¾ @ 5⅛	5 @ 5¾	5 @ 5⅜
September	4⅞ @ 5	5¼ @ 6½	5 @ 5¼
October	4¾ @ 5⅛	6 @ 6½	4¾ @ 4⅞
November	4¾ @ 5	6½ @ 6½	4¾ @ 5
December	4⅜ @ 4¾	6 @ 6¼	4⅞ @ 5

Tin Plates.

Consumption of this article in this country has increased at such an extraordinary rate of late years, and in 1880 in particular, that makers in Wales have been latterly less at a loss where to place their large production. As there is, however, a limit to everything, they and the speculators in Tin Plates, after driving up prices to an extraordinary figure early in the year, in anticipation of this large American demand and in view of the advance in Tin, soon found that these extreme rates could not be sustained, and a gradual decline set in, finally establishing a basis upon which consumption here was able to expand steadily. The year opened, for ordinary brands, as follows: Charcoal Bright, $8.37½; ditto Ternes, $7.37½; Coke Tin, $7.43¾; and ditto Ternes, $7.37½, and in Liverpool at 28/6 for Coke Tin. The latter soon attained 34/, which could not be sustained, and it gave way to 32/ in February and to 28/ in March. After reaching $10 @ $10.25 with Charcoal Bright in February here, other sorts in proportion, we receded to $9.75 in March. In April the demand here abated very materially; Liverpool gave way to 17/, and declined about $1.62½ ₮ box. A still further depreciation occurred in our markets in May, depressing Charcoal Bright to $7 @ $7.50, other sorts in proportion, when at length a vigorous rebound set in, which restored the quotation for Coke Tin to 20/ in England and steadied our market for the moment. The demand here in Zinc was, however, but moderate, and prices in England were not upheld. Quotations here were, therefore, but ill sustained, and another decline of 50¢ ensued, which caused the market to close: Charcoal Bright, $6.50 @ $6.75; ditto Ternes, $5.75; Coke Tin, $5.12½ @ $5.50; and ditto Ternes, $5 @ $5.25. July was again a rather dull month, and the improvement in England from 15/6 @ 16/6 with Coke Tin had no effect on prices here, which closed: Charcoal Bright, $6.50; ditto Ternes, $5.62½ @ $5.87½; Coke Tin, $5.25 @ $5.37½; and ditto Ternes, $5 @ $5.25. In August an improved demand at length made itself felt in our market, consumers bought steadily and even largely till about the close, when the takings slackened. Shipments this way during the first 7 months had been 93,991 tons, against 81,860 in 1879. Meanwhile the available supply here had been materially reduced. Prices remained steady, closing for the month: Charcoal Bright, $6.50; ditto Ternes, $6; Coke Tin, $5.37½; and ditto Ternes, $5.25. In September, consumers, in view of the approaching end of the season, began to operate with greater caution, expecting a decline, and prices finally receded about 25¢ ₮ box, closing: Charcoal Bright, $6.25 @ $6.37½; ditto Ternes, $5.62½ @ $5.75; Coke Tin, $5.12½ @ $5.25; and ditto Ternes, $5 @ $5.12½. October showed but a moderate degree of animation, except in lots afloat, of which some large lines were taken at a slight advance. Available parcels declined during the month 12½¢ ₮ box, and closed: Charcoal Bright, $6.12½ @ $6.25; ditto Ternes, $5.37½; Coke Tin, $4.87½ @ $5; and ditto Ternes, $4.87½. The comparative scarcity of Coke Tin caused an advance in this species in November, while the remaining kinds varied but little, and the general market, although not very active, remained in a satisfactory condition, prices closing: Charcoal Bright, $6.00 @ $6.25; ditto Ternes, $5.37½ @ $5.50; Coke Tin, $4.87½ @ 5.12½, and ditto Ternes. $5.25. In December, considering the season, the consumptive demand remains tolerably brisk, but the dealings in large lots were restricted; prices finally gave way to about 25¢ per box.

AVERAGE PRICE OF TIN PLATES (ORDINARY BRANDS) AT NEW YORK ON THE 1ST OF EACH MONTH, 1879 AND 1880.

1879.

January	$5.33	July	$5.50
February	5.70	August	5.40
March	5.75	September	5.57
April	5.67	October	6.66
May	5.66	November	7.28
June	5.43	December	7.11

1880.

January	$6.11	July	$5.49
February	8.72	August	5.70
March	8.68	September	5.78
April	8.00	October	5.46
May	6.75	November	5.40
June	5.88½	December	5.39

PREVIOUS PRICES.

July 1, 1874	$8.71	February 28, 1878	$5.66
April 28, 1876	6.58	March 31, 1878	5.66
May 5, 1877	5.97	April 30, 1878	5.72
September 7, 1877	6.00	May 31, 1878	5.37
October 19, 1877	5.97	June 15, 1878	5.35
December 20, 1877	5.85	July 15, 1878	5.33
December 31, 1877	5.77	October 3, 1878	5.18
January 1, 1878	5.75	December 18, 1878	5.28

The foregoing tables show that on February 1, 1880, we had temporarily recovered the high ruling of July 1, 1874.

DE-OXYDIZED BRONZE.

DE-OXYDIZED BRONZE (patented) is an alloy of **LAKE COPPER** and best **ASIATIC TIN** in any proportion required, so as to be either as **ductile as copper, as tough as iron, or as hard as steel,** according to the proportion of Copper and Tin used.

The **process** of making the alloy is what constitutes its superiority over any other known alloy of Copper and Tin or any other Bronze composition. The castings made from this metal, owing to its perfect fluidity when melted, possess great density, perfect soundness and homogeneity. Unlike certain bronze and other compositions, it can **be handled without the least difficulty by any ordinary founder,** as it flows like oil in pouring.

Thus the necessity and trouble of shipping patterns, the delay in receiving castings and the expense of the double charges of freight or express, such as attend the obtaining, in many cases, of Phosphor Bronze, are entirely avoided by ordering **D. O. B. in ingots.** Where this metal has superseded other compositions of similar character, it **has endured three times as long.** In a word, we claim that **De-Oxydized Bronze** not only has none of the objectionable features attributed to similar compositions, but that it possesses all their good qualities in addition to its own merits, and advantages peculiar to itself, such as the following summary will make clear:

1. ITS GREAT CONVENIENCE IN HANDLING as compared to Phosphor Bronze.
2. We claim for it SUPERIOR ANTI-FRICTION QUALITIES to any other known Brass or Bronze.
3. GREAT MALLEABILITY AND TENACITY.
4. Its homogeneousness and smoothness of surface render it capable of the HIGHEST POLISH.
5. As before mentioned, we claim for it UNEQUALED ENDURANCE.
6. We claim that JOURNALS MADE of D. O. B. REQUIRE ONE-FOURTH LESS LUBRICATING MATERIAL than any other composition yet known.

Finally, this metal has never failed to give more than satisfaction wherever used. To sustain our statements, the following testimonials will suffice:

Henry Disston & Sons, Saw, Tool, Steel and File Works, Front and Laurel Streets,

Philadelphia Smelting Company, City: PHILADELPHIA, October 4, 1879.

GENTLEMEN: After a trial of eighteen months of your "DE-OXYDIZED BRONZE" as Journal Boxes in our Rolling Mill, where great pressure is required, we take pleasure in recommending it as being superior to any we have heretofore used. Very truly, HENRY DISSTON & SONS.

Office of Eagle Iron Works, 1162 North Third Street,

Philadelphia Smelting Company: PHILADELPHIA, August 29, 1879.

GENTLEMEN: In reply to yours of the 28th inst., we beg to say that we have been using your "DE-OXYDIZED BRONZE" for over a year, and have found it better than any composition boxes we have used; and as long as you continue to make it the same quality, we shall use no other metal in our Engine Boxes. We therefore take pleasure in recommending it to Engine Builders in general.

Yours respectfully, HOFF, FONTAINE & ABBOTT.

Office of Union Brass Manufacturing Company,

CHICAGO, Dec. 23, 1880.

Philadelphia Smelting Company, Limited, Twelfth and Noble Streets, Philadelphia, Pa.:

DEAR SIRS: In reply to your inquiry of yesterday as to our opinion of "DE-OXYDIZED BRONZE" for Railway Coach Trimmings, I beg to submit that we have used it up to present writing for the trimming of something over 100 coaches. One marked peculiarity of this metal, when highly finished, is non-liability to abrasion, and its non-affinity with the gases of the atmosphere, which in embossed work is a great desideratum. To those willing to pay more in the first cost, we would confidently recommend "DE-OXYDIZED BRONZE" Trimmings as cheaper in the end. Yours very truly, J. HALL DOW, *President.*

This metal is used for the following purposes, and we can refer to large concerns in addition to above, through the New England and Middle and Western States, who are using it in preference to any other.

1. Engine, Car and Machinery Journals.
2. Pumps, Valves and Linings, Cylinders, Pinions, Cogs, Plungers, Crank Pins, &c.
3. Car Trimmings, Harness and Coach Furniture, House Hardware, Steam Fittings, &c.
4. Wire, Sheets, Rods and Tubes.

And for any other purpose that a **handsome, durable and sound** Bronze is required. We especially commend it to **Railroad Companies, Car Builders, Machinists, Engineers** and others requiring a **Journal Metal** that will stand the **severest friction** and the **heaviest pressure.**

Manufactured and for sale in Ingots and Castings by the

PHILADELPHIA SMELTING COMPANY, Limited,

S. E. COR. TWELFTH AND NOBLE STS., PHILADELPHIA, PA., U. S. A.

GENUINE BABBITT.

Our Genuine Babbitt is superior to all other makes in the market in every particular. We guarantee it to be perfect in its Anti-friction qualities in machinery AT A SPEED OF **10,000** PER MINUTE, or at **1000** TONS PRESSURE for **10** YEARS. We append below testimonials from A1 houses justifying us in the above claims.

From J. L. Marsden, Supt., Blake Crusher Co., New Haven, Conn., and Farrell Foundry and Machine Co., Ansonia, Conn.

AUGUST 17, 1880.

The "Genuine Babbitt" we have bought from you gives perfect satisfaction in our Stone Breakers. We have it working in bearings 12 in. long and 5 in. diameter. One-half the revolution of shaft there is a pressure of 900 tons. The other half 2½ tons. The shaft makes from 200 to 250 turns per minute. I think this is a very severe test, yet they have been running for more than one year.

From Witherby, Rugg & Richardson, Worcester, Mass.,

Manufacturers of Wood Working Machinery.

NOVEMBER 20, 1880.

Send us 1000 pounds "Genuine Babbitt" divided into Bars as usual. We think the continuance of our trade with you in the face of the constant effort made by other parties to divert our patronage, is a sufficient recommendation of your goods. We speed some journals as high as 6000.

Yours truly, WITHERBY, RUGG & RICHARDSON.

From this it will be seen that it can have no superior, or even equal, as an Anti-Friction Metal in anything manufactured. We make besides all grades of Anti-Friction Metals,

Letter A, Guaranteed at a speed of 2000.
Letter B, Guaranteed at a speed of 1000.
Letter C, Guaranteed at a speed of 800.
Letter D, Used for Shafting.
Letter E, Used for Ag'l Implements, &c.
Letter A L, For slow speed.

All our Metals are made from best Lake Copper, Asiatic Tin, Cookson's Antimony and best Refined Lead, and in all cases run free at melting heat, without drossing, and without any necessity for heating the journals into which they are poured.

MANUFACTURERS' AND MACHINISTS' NAME PLATES,

REAL BRONZE, FINISHED.

Patterns from $3 upwards, according to Size and Style. Plates, $3 per dozen and upward, according to Size and Style.

SKETCHES FURNISHED FOR APPROVAL BEFORE MAKING PATTERNS.

We have a specialty in this line and produce a handsomer plate, at less money, than can be obtained elsewhere.

PHILADELPHIA SMELTING COMPANY, Limited,

S. E. COR. TWELFTH AND NOBLE STREETS, PHILADELPHIA, PA.

Tin.

The unexpectedly large quantity of Tin absorbed in the United States in 1879, some 8000 tons, powerfully contributed to revive early in the year speculation for a rise both in Europe and on this side, the more so as there was every indication in January that this American consumption would not soon abate. The consequence was a decidedly upward tendency from the very commencement in this market, notwithstanding the liberal arrivals of 47,149 slabs in all the month. Straits Tin was thus carried from 21½¢ @ 24¾¢ here, and from £92 @ £100 in London. In February less favorable views began to prevail, and a feeling of indifference soon pervaded the markets, precipitating a slow, but uninterrupted decline. At ruling high prices consumers were by no means inclined to anticipate their wants, and as they were sufficiently stocked for the moment, speculators were left to sustain rates single handed at a range of value little justified by the real position of the metal. Actual arivals were limited to some 250 tons, but the cable announced large shipments this way from the Straits which would drop into our dull season, a prospect by no means encouraging. The consequence of this state of affairs was a gradual weakening and a return from 24¢ at the opening in February, to 23¼¢ at the close. London, meanwhile, gave way from £98 @ £93 with Straits Tin. During the first two months of the year the statistical position of Tin in the United States had shaped as follows: Stocks here and in Boston, January 1, 1880, were estimated at 2500 tons; the receipts in January and February were about 52,000 slabs Straits, 14,000 ingots Australian and 18,000 slabs Billiton, footing up, together with some English and Banca imports, about 4500 tons, and constituting a joint supply of 7000 tons; while a very liberal estimate placed the consumption in January and February at, altogether, 2000 tons, leaving, on March 1, an available stock of 5000 tons, and adding thereto the amounts afloat, the visible supply actually reached some 8500 tons. At the same time, it was learned that production in Tasmania was developing on a very liberal scale, and that 1000 tons Australian Tin, believed to have gone into consumption on the Continent, had been returned to London, all of which impressed most unfavorably not only the London and Dutch markets, but also our own, so much so that a gradual decline set in simultaneously on both sides, carrying London back from £93 to £86, and New York from 22½¢ to 20½¢. Sales here did not exceed, in all March, 400 tons, while the March shipments from the Straits alone this way amounted to 500 tons. These facts caused great demoralization in our market in April, stocks accumulating in store all the time, so that Straits Tin receded, in the course of the month, from 20½¢ to 18¼¢. The total arrivals summed up some 50,000 slabs, while sales did not exceed 400 tons. May opened with a depressed feeling, particularly also in Europe, caused there not so much by the statistical position—which, instead of getting worse, was, on the contrary, improving—but by a general decline in metals, affecting Tin with the rest. For a few days Tin resisted this indirect influence in the London market, and kept fluctuating between £84 and £77, but it finally gave way and dropped to £76, when it became known there that we had dropped from 18¼¢ to 16¢ with Straits, and that Billiton had been forced off as low as 15¢. The arrivals here figured up in May to some 18,000 slabs and the sales about 300 tons. Both the European and American markets were now evidently ripe for a vigorous rebound from a reaction which had evidently been carrying the price of Tin below its intrinsic value. During the fore part of June a speculative movement was, consequently, set on foot in Boston, which, when it became known, at first created a good deal of confusion and irregularity in the market. Straits Tin for a moment had dropped at New York to 15¢, and immediately rebounded to 15¾¢, being carried, in the course of the month, to 18¢ @ 18½¢, while London, upon this news, recovered, in less time even, £15 ℔ ton. In June, when this movement was inaugurated, the visible supply on this side was still 4640 tons, the arrivals during May having been 1300 tons. Sales in June amounted to 1000 tons and 100 tons were returned to Europe. In spite of the summer dullness of July there was no relaxation in speculation in Tin on both sides, London advancing in the course of the month another £10, and New York from 18¼¢ @ 21¼¢, some 1500 tons changing hands in this market. The general advance in Tin of 40% since the middle of June, however, created a feeling of great caution among consumers, and to a notable degree affected their takings; this, however, did not prevent the metal from closing with considerable firmness for the month. Hesitation on the part of consumers to take hold rather increased in August. Opening at 21¼¢, the price thus weakened during the month and closed at 21¢. Estimates of consumption were reduced for the month from 1200 tons to 1000, and even this was deemed too large. Deliveries in England and Holland during the first 7 months were put at 11,700 tons, against 12,230 tons during the corresponding period of the previous year, but the statistical position there was favorable enough to uphold the advance established. Still it became evident that the recovery of a remunerative price would attract shipments in increasing quantities both to Europe and America, and that nothing would sustain prices except large deliveries in the fall or another resort to speculative upholstering. Under the prevalence of this sentiment consumers only operated in all September from hand-to-mouth, while speculators withdrew for the moment altogether, causing weakness and a revival from 20¾¢ at the opening to 20¢ at the close. In London and Holland a similar feeling ruled the markets. It was shown that the United States had imported during the first 7 months no less than 9533 tons of Tin, against 4776 tons during the same time in 1879. While importation had thus doubled, the average monthly consumption for this period was estimated not to have exceeded 1362 tons. News from Australia announced at the same time a vigorous resumption of production at the antipodes. The stock at the commencement of September on this coast proved to be 1800 tons, with 1900 tons afloat. In October it was shown that during the first 8 months we had imported 10,206 tons of Tin, against 7585 in 1879; our supply had therefore been about 1200 tons per month, the maximum of estimated consumption. Sales in October not going beyond 1000 tons at 19¾¢ @ 20¼¢, the market, in the absence of all redeeming features on this side, became quite flat and closed at 19¾¢. The presidential election at the same time approaching, little interest began to be felt in the metal. In Europe, on the contrary, activity was kept up and seemed to prepare a speedy revival even in speculation for a rise. In November, Europe, indeed, launched out again and did not fail to electrify the American markets likewise, causing to be done a large business here, some 2000 tons changing hands at 19¾¢ @ 21¼¢. In December the speculation for a rise in Tin seemed to have spent itself, and the price gradually receded from 21⅜¢ to 19¼¢; in England to £91. Straits on the other side showed the following results for 11 months:

	During first 11 mos.	
	1880.	1879.
Shipments from Straits to London, tons	2,155	3,230
Shipments from Australia to London, tons	6,948	6,781
Deliveries of tin in London, tons	12,092	12,361
Deliveries of tin in London and Holland, tons	19,210	19,731

PRICES OF BANCA TIN IN HOLLAND SINCE 1872, IN GUILDERS, PER 50 KILOS.

	1873	1874	1875	1876	1877	1878	1879	1880.
Jan.	1..85½	70	57⅛	50	45	40¾	38½	54¾
Feb.	1..87½	70	56¼	50½	43½	40	36¾	58¼
Mar.	1..84	62	54	50¾	43¾	40½	40	55½
April	1 87	53	51½	50	42¾	40	43	52¾
May	1..84	57	50¾	49	42½	39½	40¼	50¾
June	1..80	58½	50	45½	42½	39½	39½	43½
July	1..83¼	60	50¾	46¾	42½	39¾	39	49
Aug.	1..79¾	56½	48¾	44	41⅝	39½	38½	56
Sept.	1..79	57	51	43	40½	37¾	41¾	54½
Oct.	1..74¾	56½	52¾	42½	40¾	35¾	45	52
Nov.	1..72½	58	52¾	44½	43	37¾	57	54½
Dec.	1..67½	58½	51	44¾	42½	39	56	56½

The following shows the course of prices at New York:

STRAITS TIN.

Sept.	'78..13⅛¢ @ 13⅝¢	Nov.	'79..22 ¢ @ 24 ¢
Oct.	'78..13⅛¢ @ 15½¢	Dec.	'79..20 ¢ @ 22 ¢
Nov.	'78..15¾¢ @ 17 ¢	Jan.	'80..21 ¢ @ 25 ¢
Dec.	'78..15 ¢ @ 16 ¢	Feb.	'80..23¾¢ @ 24¾¢
Jan.	'79..14 ¢ @ 14⅝¢	Mar.	'80..21¾¢ @ 22⅜¢
Feb.	'79..14⅜¢ @ 15 ¢	April,	'80..18¾¢ @ 21¾¢
Mar.	'79..14⅜¢ @ 15⅜¢	May,	'80..16 ¢ @ 18 ¢
April,	'79..14⅜¢ @ 15 ¢	June,	'80..15¾¢ @ 18⅜¢
May,	'79..14⅛¢ @ 14⅝¢	July,	'80..18⅜¢ @ 20¾¢
June,	'79..14⅜¢ @ 15¾¢	Aug.	'80..20⅜¢ @ 21⅝¢
July.	'79..14½¢ @ 14⅞¢	Sept.	'80..19⅞¢ @ 20¾¢
Aug.	'79..14⅜¢ @ 16 ¢	Oct.	'80..19¾¢ @ 20 ¢
Sept.	'79..15¾¢ @ 17½¢	Nov.	'80..20¾¢ @ 21¾¢
Oct.	'79..18¾¢ @ 26 ¢	Dec.	'80..19¾¢ @ 21⅜¢

Lead.

The month of January found our Lead market in an unexcited condition, being but moderately active at 6¢ @ 6⅛¢, Common Domestic sales summing up 2000 tons, for the most part at 6¢. Some arrivals from England and Spain were placed without difficulty, some more still being expected. An advancing market in Europe lent support to holders here. Although in February sales were restricted to 600 tons at $5.95 @ $6, a firm feeling prevailed, the general opinion being that the approaching spring trade would prove an active one in this metal, and that the large consumption in 1879 would be fully kept up. March opened with an unusally light stock here of only about 702 tons, against 8000 tons the year before, but some foreign Lead being offered early in the month as low as $5.80, great irregularity seized upon the market, some 1500 tons of Common Domestic selling from $5.95 down to 5½¢, at which it closed. News reached us from Spain that, in consequence of more remunerative prices ruling, production had begun to expand considerably in that quarter. In April accounts were received from London to the effect that a syndicate had been formed for the purpose of upholding the price of the metal on the other side, and the market here was stirred up somewhat from its apathy. The stronger feeling thus engendered was doomed, however, to be but short lived, for soon after the cable informed us that the speculation had not been set on foot, the proposed syndicate not having come to an agreement. This failure to support prices on the other side had a demoralizing effect here, the more so as the consumptive demand proved to be feeble. The fact is that at this time Spanish production was statiscally shown to have been 80,000 tons in 1879, being 10,000 tons in excess of 1878, and that of Germany 73,000 tons, being 3 % greater than in 1878. Sales for the month here were limited to 1200 tons from 5¾¢ down to $5.45. The spring trade in this country had not come up to expectations, and the prospect ahead was not of the brightest; the month, therefore, closed with considerable weakness. This dull feeling continued during May, carrying down the price from $5.15 to 4¾¢, notwithstanding the scarcity of ore and high price of it reported from Leadville. Aggregate sales in May in this market did not exceed 500 tons, in small lots. In June, news reached us of the labor difficulties at Leadville, and as the stock here was only 2500 tons, against 4000 tons in January, after importing some 2000 tons, more favorable views were entertained and greater firmness was exhibited by holders. Although sales in June were restricted to 500 tons at 4½¢ @ 4¾¢, the closing price was slightly better, being 4¾¢ @ 5¢. The month of July fully justified expectations of an increasing trade, leading as it did to sales of together some 1500 to 2000 tons at 4½¢, unaccompanied by excitement and speculation. Opening at 4¾¢, the demand increased as soon as concessions were made, consumers resolutely taking hold of the metal at the decline, preferring to lay in supplies during a quiet month rather than run the chance of having to pay more in an active one. While this happened here, producers in the interior did not press their Lead for sale, the entire aspect thus becoming an eminently sound and reassuring one, without holding out prospects of any very extraordinary advance. August fulfilled all that had been expected of it in the way of liveliness, leading to sales of 2500 tons Common and 1000 tons Refined Lead. First sales during the month had been effected at 4¼¢, but as the demand developed a gradual appreciation took place, raising the price toward the close to 5¢. The market meanwhile remained unexcited, and the dealings thus betokened great soundness, leading to the best hopes for the remainder of the campaign. While this was the case on this side, the European aspect also improved, recovering from the late prostration. Confidence was thus restored on both sides the Atlantic, without the intervention of the speculative element usually so precarious in this particular metal. September did not distinguish itself by much activity, sales being confined to 1500 tons of Common Lead, but the market, nevertheless, maintained its firmness, principal holders persevering in their attitude of stiffness and confidence. Prices varied very little from 4⅞¢, which was also the closing figure. Refined remained inactive, but as White Lead manufacturers were known to be lightly stocked, and, therefore, likely soon to resume purchases on a more extensive scale, prices remained well supported. In October holders of Common Lead deemed it more prudent to meet the market unhesitatingly and make liberal concessions. This provoked an active demand on the part of consumers, who were thus able to secure some 3000 tons in the course of the month, at $4.65 the greater portion of it. Toward the close of month the price recovered to 4¾¢. It was evident that at this range of value consumption was able to expand satisfactorily, and as the season was too far advanced to encourage any attempt at speculation, there was every appearance that we should reach the end of the campaign without undue fluctuation. Lead producers thus had the satisfaction of perceiving, when November was at hand, that throughout the year consumption had developed freely at rates acceptable to both parties, while allowing production to expand unhampered at its ordinary rate of progress. There had been no interference on the part of speculation, and violent fluctuations, so detrimental to legitimate trade, had been avoided. Sales in November were restricted to 1500 tons at $4.80 @ $4.85, but leaving, nevertheless, but comparatively light stocks at the seaports. In December the market became excessively dull and developed great weakness, the absence of demand carrying down the price by degrees from 4¾¢ @ 4¼¢ for Common Domestic, closing at the latter figure.

PRICE OF COMMON DOMESTIC LEAD AT NEW YORK.—CENTS PER POUND.

	1877.	1878.	1879.	1880.
January	6¼	4⅛	4¼	6
February	6⅜	3⅝	4⅜	6
March	6⅜	3¾	4	5½
April	6⅛	3¾	3	5⅝
May	5¾	3⅛	3	4¾
June	5⅜	3⅛	3¼	4⅜
July	5⅜	3⅛	4	4½
August	5	3⅜	4⅛	4¾
September	4¾	3⅜	4	4⅞
October	4⅜	3½	5¼	4⅝
November	4¾	3⅞	5½	4¾
December	4½	4	5¾	4¾

Spelter.

This metal has been unfavorably situated throughout the year. At first an attempt was made in Europe to control it by means of a combination of leading producers, but when these perceived that early in spring all metals displayed great weakness through the disappointment of speculators, who had in vain attempted, in January and February, to inaugurate a general advance, they abandoned the idea of artificially upholding the metal in the face of an exuberant production which consumption could hardly cope with. Spelter had thus been placed in an unfavorable position from the very commencement in Europe. While the year advanced, it was seen that the consumptive demand on the Continent did not come up to even moderate expectations, while production, especially in Silesia, was larger than ever. To this must be added an unfavorable change in commercial relations between Prussian Silesia and Russia, the latter country ceasing, in consequence of high protective duties, to take Silesian Sheet Zinc, which it was wont to draw largely from that part of Germany. While this was the case, Spelter and Zinc production developed in Poland, and Germany thus lost at one blow an important customer, as nowhere else in Europe the output of Spelter received the least check. It was bound to decline in value still further, unless speculation came to the rescue, which has not been the case. Our own market did not, of course, escape these untoward influences, and the result has been a dreary state of affairs here, which it is painful to follow in its uninteresting details. We, therefore, merely place on record the course of prices as compared with former years:

LOWEST AND HIGHEST PRICE OF COMMON SPELTER.—CENTS PER POUND.

	1878.	1879.	1880.
January	5⅝ @ 6	4⅜ @ 4⅛	6 @ 6¾
February	5⅜ @ 5⅞	4⅜ @ 5	6½ @ 7
March	5⅜ @ 5¾	4½ @ 4¾	6¾ @ 7
April	5⅛ @ 5⅜	4⅜ @ 4¾	6¾ @ 7
May	4¾ @ 5⅜	4½ @ 4¾	5¾ @ 6¼
June	4½ @ 5	4⅜ @ 4⅜	5 @ 5¾
July	4.55 @ 5	4½ @ 4⅞	5 @ 5⅛
August	4¾ @ 5⅛	5 @ 5¾	5 @ 5⅜
September	4⅞ @ 5	5¾ @ 6⅛	5 @ 5¾
October	4¾ @ 5⅛	6 @ 6½	4¾ @ 4⅞
November	4¾ @ 5	6⅛ @ 6½	4¾ @ 5
December	4⅜ @ 4¾	6 @ 6¼	4⅞ @ 5

Tin Plates.

Consumption of this article in this country has increased at such an extraordinary rate of late years, and in 1880 in particular, that makers in Wales have been latterly less at a loss where to place their large production. As there is, however, a limit to everything, they and the speculators in Tin Plates, after driving up prices to an extraordinary figure early in the year, in anticipation of this large American demand and in view of the advance in Tin, soon found that these extreme rates could not be sustained, and a gradual decline set in, finally establishing a basis upon which consumption here was able to expand steadily. The year opened, for ordinary brands, as follows: Charcoal Bright, $8.37½; ditto Ternes, $7.37½; Coke Tin, $7.43¾; and ditto Ternes, $7.37½, and in Liverpool at 28/6 for Coke Tin. The latter soon attained 34/, which could not be sustained, and it gave way to 32/ in February and to 28/ in March. After reaching $10 @ $10.25 with Charcoal Bright in February here, other sorts in proportion, we receded to $9.75 in March. In April the demand here abated very materially; Liverpool gave way to 17/, and declined about $1.62½ ℔ box. A still further depreciation occurred in our markets in May, depressing Charcoal Bright to $7 @ $7.50, other sorts in proportion, when at length a vigorous rebound set in, which restored the quotation for Coke Tin to 20/ in England and steadied our market for the moment. The demand here in Zinc was, however, but moderate, and prices in England were not upheld. Quotations here were, therefore, but ill sustained, and another decline of 50¢ ensued, which caused the market to close: Charcoal Bright, $6.50 @ $6.75; ditto Ternes, $5.75; Coke Tin, $5.12½ @ $5.50; and ditto Ternes, $5 @ $5.25. July was again a rather dull month, and the improvement in England from 15/6 @ 16/6 with Coke Tin had no effect on prices here, which closed: Charcoal Bright, $6.50; ditto Ternes, $5.62½ @ $5.87½; Coke Tin, $5.25 @ $5.37½; and ditto Ternes, $5 @ $5.25. In August an improved demand at length made itself felt in our market, consumers bought steadily and even largely till about the close, when the takings slackened. Shipments this way during the first 7 months had been 93,991 tons, against 81,860 in 1879. Meanwhile the available supply here had been materially reduced. Prices remained steady, closing for the month: Charcoal Bright, $6.50; ditto Ternes, $6; Coke Tin, $5.37½; and ditto Ternes, $5.25. In September, consumers, in view of the approaching end of the season, began to operate with greater caution, expecting a decline, and prices finally receded about 25¢ ℔ box, closing: Charcoal Bright, $6.25 @ $6.37½; ditto Ternes, $5.62½ @ $5.75; Coke Tin, $5.12½ @ $5.25; and ditto Ternes, $5 @ $5.12½. October showed but a moderate degree of animation, except in lots afloat, of which some large lines were taken at a slight advance. Available parcels declined during the month 12½¢ ℔ box, and closed: Charcoal Bright, $6.12½ @ $6.25; ditto Ternes, $5.37½; Coke Tin, $4.87½ @ $5; and ditto Ternes, $4.87½. The comparative scarcity of Coke Tin caused an advance in this species in November, while the remaining kinds varied but little, and the general market, although not very active, remained in a satisfactory condition, prices closing: Charcoal Bright, $6.00 @ $6.25; ditto Ternes, $5.37½ @ $5.50; Coke Tin, $4.87½ @ 5.12½, and ditto Ternes. $5.25. In December, considering the season, the consumptive demand remains tolerably brisk, but the dealings in large lots were restricted; prices finally gave way to about 25¢ per box.

AVERAGE PRICE OF TIN PLATES (ORDINARY BRANDS) AT NEW YORK ON THE 1ST OF EACH MONTH, 1879 AND 1880.

1879.

January	$5.33	July	$5.50
February	5.70	August	5.40
March	5.75	September	5.57
April	5.67	October	6.66
May	5.66	November	7.28
June	5.43	December	7.11

1880.

January	$6.11	July	$5.49
February	8.72	August	5.70
March	8.68	September	5.78
April	8.00	October	5.46
May	6.75	November	5.40
June	5.88½	December	5.39

PREVIOUS PRICES.

July 1, 1874	$8.71	February 28, 1878	$5.66
April 28, 1876	6.58	March 31, 1878	5.66
May 5, 1877	5.97	April 30, 1878	5.72
September 7, 1877	6.00	May 31, 1878	5.37
October 19, 1877	5.97	June 15, 1878	5.35
December 20, 1877	5.85	July 15, 1878	5 33
December 31, 1877	5.77	October 3, 1878	5.18
January 1, 1878	5.73	December 18, 1878	5.28

The foregoing tables show that on February 1, 1880, we had temporarily recovered the high ruling of July 1, 1874.

DE-OXYDIZED BRONZE.

DE-OXYDIZED BRONZE (patented) is an alloy of **LAKE COPPER** and best **ASIATIC TIN** in any proportion required, so as to be either as **ductile as copper, as tough as iron, or as hard as steel,** according to the proportion of Copper and Tin used.

The **process** of making the alloy is what constitutes its superiority over any other known alloy of Copper and Tin or any other Bronze composition. The castings made from this metal, owing to its perfect fluidity when melted, possess great density, perfect soundness and homogeneity. Unlike certain bronze and other compositions, it can **be handled without the least difficulty by any ordinary founder,** as it flows like oil in pouring.

Thus the necessity and trouble of shipping patterns, the delay in receiving castings and the expense of the double charges of freight or express, such as attend the obtaining, in many cases, of Phosphor Bronze, are entirely avoided by ordering **D. O. B. in ingots.** Where this metal has superseded other compositions of similar character, it **has endured three times as long.** In a word, we claim that **De-Oxydized Bronze** not only has none of the objectionable features attributed to similar compositions, but that it possesses all their good qualities in addition to its own merits, and advantages peculiar to itself, such as the following summary will make clear:

1. ITS GREAT CONVENIENCE IN HANDLING as compared to Phosphor Bronze.
2. We claim for it SUPERIOR ANTI-FRICTION QUALITIES to any other known Brass or Bronze.
3. GREAT MALLEABILITY AND TENACITY.
4. Its homogeneousness and smoothness of surface render it capable of the HIGHEST POLISH.
5. As before mentioned, we claim for it UNEQUALED ENDURANCE.
6. We claim that JOURNALS MADE of D. O. B. REQUIRE ONE-FOURTH LESS LUBRICATING MATERIAL than any other composition yet known.

Finally, this metal has never failed to give more than satisfaction wherever used. To sustain our statements, the following testimonials will suffice:

Henry Disston & Sons, Saw, Tool, Steel and File Works, Front and Laurel Streets,

Philadelphia Smelting Company, City: PHILADELPHIA, October 4, 1879.

GENTLEMEN: After a trial of eighteen months of your "DE-OXYDIZED BRONZE" as Journal Boxes in our Rolling Mill, where great pressure is required, we take pleasure in recommending it as being superior to any we have heretofore used. Very truly, HENRY DISSTON & SONS.

Office of Eagle Iron Works, 1162 North Third Street,

Philadelphia Smelting Company: PHILADELPHIA, August 29, 1879.

GENTLEMEN: In reply to yours of the 28th inst., we beg to say that we have been using your "DE-OXYDIZED BRONZE" for over a year, and have found it better than any composition boxes we have used; and as long as you continue to make it the same quality, we shall use no other metal in our Engine Boxes. We therefore take pleasure in recommending it to Engine Builders in general.

Yours respectfully, HOFF, FONTAINE & ABBOTT.

Office of Union Brass Manufacturing Company,

CHICAGO, Dec. 23, 1880.

Philadelphia Smelting Company, Limited, Twelfth and Noble Streets, Philadelphia, Pa.:

DEAR SIRS: In reply to your inquiry of yesterday as to our opinion of "DE-OXYDIZED BRONZE" for Railway Coach Trimmings, I beg to submit that we have used it up to present writing for the trimming of something over 100 coaches. One marked peculiarity of this metal, when highly finished, is non-liability to abrasion, and its non-affinity with the gases of the atmosphere, which in embossed work is a great desideratum. To those willing to pay more in the first cost, we would confidently recommend "DE-OXYDIZED BRONZE" Trimmings as cheaper in the end. Yours very truly, J. HALL DOW, President.

This metal is used for the following purposes, and we can refer to large concerns in addition to above, through the New England and Middle and Western States, who are using it in preference to any other.

1. Engine, Car and Machinery Journals.
2. Pumps, Valves and Linings, Cylinders, Pinions, Cogs, Plungers, Crank Pins, &c.
3. Car Trimmings, Harness and Coach Furniture, House Hardware, Steam Fittings, &c.
4. Wire, Sheets, Rods and Tubes.

And for any other purpose that a **handsome, durable and sound** Bronze is required. We especially commend it to **Railroad Companies, Car Builders, Machinists, Engineers** and others requiring a **Journal Metal** that will stand the **severest friction** and the **heaviest pressure.**

Manufactured and for sale in Ingots and Castings by the

PHILADELPHIA SMELTING COMPANY, Limited,

S. E. COR. TWELFTH AND NOBLE STS., PHILADELPHIA, PA., U. S. A.

GENUINE BABBITT.

Our Genuine Babbitt is superior to all other makes in the market in every particular. We guarantee it to be perfect in its Anti-friction qualities in machinery AT A SPEED OF **10,000** PER MINUTE, or at **1000** TONS PRESSURE for **10** YEARS. We append below testimonials from A1 houses justifying us in the above claims.

From J. L. Marsden, Supt., Blake Crusher Co., New Haven, Conn., and Farrell Foundry and Machine Co., Ansonia, Conn.

AUGUST 17, 1880.

The "Genuine Babbitt" we have bought from you gives perfect satisfaction in our Stone Breakers. We have it working in bearings 12 in. long and 5 in. diameter. One-half the revolution of shaft there is a pressure of 900 tons. The other half 2½ tons. The shaft makes from 200 to 250 turns per minute. I think this is a very severe test, yet they have been running for more than one year.

From Witherby, Rugg & Richardson, Worcester, Mass.,

Manufacturers of Wood Working Machinery.

NOVEMBER 20, 1880.

Send us 1000 pounds "Genuine Babbitt" divided into Bars as usual. We think the continuance of our trade with you in the face of the constant effort made by other parties to divert our patronage, is a sufficient recommendation of your goods. We speed some journals as high as 6000.

Yours truly, WITHERBY, RUGG & RICHARDSON.

From this it will be seen that it can have no superior, or even equal, as an Anti-Friction Metal in anything manufactured. We make besides all grades of Anti-Friction Metals,

Letter A, Guaranteed at a speed of 2000. **Letter B, Guaranteed at a speed of 1000.** **Letter C, Guaranteed at a speed of 800.**
Letter D, Used for Shafting. **Letter E, Used for Ag'l Implements, &c.** **Letter A L, For slow speed.**

All our Metals are made from best Lake Copper, Asiatic Tin, Cookson's Antimony and best Refined Lead, and in all cases run free at melting heat, without drossing, and without any necessity for heating the journals into which they are poured.

MANUFACTURERS' AND MACHINISTS' NAME PLATES,

REAL BRONZE, FINISHED.

Patterns from $3 upwards, according to Size and Style. Plates, $3 per dozen and upward, according to Size and Style.

SKETCHES FURNISHED FOR APPROVAL BEFORE MAKING PATTERNS.

We have a specialty in this line and produce a handsomer plate, at less money, than can be obtained elsewhere.

PHILADELPHIA SMELTING COMPANY, Limited,

S. E. COR. TWELFTH AND NOBLE STREETS, PHILADELPHIA, PA.

Special Notices.

SECOND-HAND and NEW TOOLS FOR SALE LOW.

January List, No. 1.

Pit Lathe, 31½ ft. swing, will turn a pulley as wide as 9 ft. face.
Pit Lathe, 16 ft. swing, will turn a pulley 30 inch face, with gear-cutting attachment.
Lathe, 100 in. swing, 18 ft. bed.
Lathe, 22 in. x 8½. New.
Lathe, 22 in. x 11½. New.
Lathe, 24 in. swing, 15 ft. bed.
Lathe, 21 in. swing, 8 ft. bed.
Lathe, 19 in. swing, 6¾ ft. bed.
Lathe, 15 inch swing, 6 ft bed. New.
Engine Lathes, 4 ft bed.
Horizontal Drilling Lathe, 24 in. swing, 19 ft. bed.
Planer, 32 in. wide, 6 ft. long.
Planer, 16 in. wide, 3 ft. long. New.
Planer, 24 in. x 4 ft. New.
Planer, 24 in. wide, 6 ft. long.
Planer, 33 in. wide, 5 ft. long.
Planer, 32 in. wide, 8 ft. long.
Planer, 52 in. wide, 18 ft. long.
Dimension Planer, 24 in. x 18 ft.
Upright Drill Press, 16 in. swing.
Suspension Drill.
Upright Boring Mill, 4 ft. between uprights.
Boring Bar, 12¾ in. diam., 10 ft long, self-feeding.
Boring Bar, 9 in. diam., 8½ ft. long, self-feeding.
Forcing Machine, for forcing shafts off pulleys.
Crank Planer.
Combined Punch and Shear.
8x12 Horizontal Engine. New.
Two McKenzie Cupolas, 4 ft. x 4½ inside.
Ladles, &c., &c.
Seven Cranes.
Jig Saw.
Pattern Makers' Lathe.
Post Drills.
Lathe, 16 x 6.
Drills, 26 in. New.
Shaper, 15 in. New.
Shaper, 9 in. New.
Shaper, 12 in. stroke.
Gear Cutter.
600 lb. Steam Hammer.
1000 lb. Steam Hammer.
Suspension Drill.

The Wood & Light Machine Co.

PATTERNS

of Machinists' Tools are for sale at very low prices

For sale by

The Geo. Place Machinery Agency,

121 Chambers and 103 Reade Sts.,

NEW YORK.

NOTICE.

We own the **PATTERNS** for the large variety of

MACHINISTS' TOOLS

Formerly made by the

WOOD & LIGHT MACHINE CO.,

and would like to make an arrangement with some machine shop of good size to

Manufacture Tools

for us from said patterns. Address

The Geo. Place Machinery Agency,

121 Chambers and 103 Reade Sts., N. Y.

No. 53 Dey Street, N. Y.,

January 1, 1881.

The copartnership heretofore existing between John H. Butler and Teunis D. Huntting, under the firm name of Butler & Huntting, has this day been dissolved by the withdrawal of said Teunis D. Huntting.

Mr. Butler and Mr. John C. Constant have this day formed a copartnership for continuing the business at the same place, under the firm name of Butler & Constant. Mr. Butler will pay all obligations, and receive all assets of the old firm of Butler & Huntting.

JOHN H. BUTLER,
TEUNIS D. HUNTTING,
JOHN C. CONSTANT.

For Rent.

The large brick FOUNDRY of the FRANKLIN STOVE COMPANY, located on Central Way, Cleveland, Ohio, and adjoining the Valley Railway, will be rented for a term of years on very favorable terms—or will sell—possession given at once. The building is ready for occupancy as a foundry, or can be used for any manufacturing purpose with slight modifications. For particulars, address G. A. GARRETSON,

Cashier of Second National Bank,
Cleveland, Ohio.

THE FIRM OF JOHN G. BRENNER, SON & CO.

consisting of John G. Brenner, John C. Brenner and J. B. Carter is this day dissolved on account of the death of Mr. John G. Brenner, the senior partner. The business will be continued under the same firm name by the undersigned.

JOHN C. BRENNER,
J. B. CARTER,
J. H. BRENNER.

Philadelphia, Dec. 31, 1880.

SWEDISH CHARCOAL IRON WORKERS.—Sinkers, Shinglers, Heaters and Rollers, who understand the trade thoroughly, desire good and steady employment in the above branches.
Address CHAS. AHLSTROM,
Trenton, N. J.

A SALESMAN of 12 years' experience in the Hardware business wishes to hear from some first-class firm desiring a salesman for Western trade. References first-class in every respect.
Address O.,
Office of *The Iron Age*, 83 Reade St., New York

STEEL:

Its History, Manufacture, Properties, and Uses.

By J. S. JEANS,

Secretary of the Iron and Steel Institute.

Section I. *History of Steel:* Chap. 1. History of Steel; 2. Early History in England; 3. Progress of Invention; 4. History of Bessemer Process; 5. Siemens-Martin Process; 6. Other Steel-making Processes; 7. Steel in America; 8. Germany; 9. France; 10. Austria; 11. Russia; 12. Sweden; 13. Other Countries.—Section II. *Manufacture of Steel:* Chap. 14. Cementation and other Methods; 15. Manufacture by Bessemer Process; 16. Siemens-Martin Process; 17. Other Methods.—Section III. *Chemical and Physical Properties of Steel:* Chap. 18. Phosphorus in Steel; 19. The Use of Manganese; 20. Spiegeleisen; 21. Sulphur in Steel; 23. Silicon in Steel; 24. Tensile Strength of Steel; 24. Mechanical Tests of Steel; 25. Analysis of Steel.—Section IV. *Uses of Steel:* Chap. 26. Application of Steel to Railway Purposes; 27. To Shipbuilding; 28. To Bridge Building; 29. To General Purposes; 30. Guns and Armor Plates; 31. Other Purposes.

Price.....$14.50

For Sale by

DAVID WILLIAMS,
83 Reade St., New York.

Special Notices.

Large Stock of New and Second-Hand

MACHINERY.

Three pair Scales, weigh to 3500 lbs. Fairbanks.
One Horizontal Corliss Engine, 200 h. p.
One Delamater Sugar-house Engine, 26 in. x 48 in.
One Horizontal Engine, 11 in. x 18 in., Whitehall & Hampsen [ferty.
One Horizontal Engine, 15½ in. x 30 in. Todd & Rafferty.
One Horiz'l Engine, 9 in. x 12 in. Erie Iron Works.
Five Horizontal Engines, 9 in. x 12 in. J. & R. J. Gray.
Four Horizontal Engines, 8 in. x 12 in.
One Horizontal Engine, 3 in. x 6 in.
One Portable Engine, 5 horse power
Two Horizontal Return Tub. Boilers, 100 h. p. each.
Two Hor. Tub. Boilers, 5 ft. x 14½ ft., 100 2¾-in. tubes
One Hor. Tubular Boiler, 5 ft. x 15 ft., 83 3-in. tubes.
One Hor. Tubular Boiler, 6 ft x 14 ft. 67 4-in. tubes.
Two Hor. Tub. Boilers, 5 ft. x 14 ft., 50 4-in. tubes.
Two Hor. Tub. Boilers, 4½ ft. x 13½ ft., 43 4-in. tubes
Three Hor. Tub. Boilers, 4 ft. x 13 ft., 34 4-in. tubes.

MACHINISTS' TOOLS.

One Hydraulic Press, 30-in. ram, in perfect order.
One Lathe, 16 in. x 7 ft. bed.
One Planer, 22 in x 5 ft. bed.
One Planer, 36 in. x 16 ft. bed. Chain feed.
Two Crank Planers, 18 in. x 2 ft.
One New Haven Drill. Will bore in center of 60 in.
One New Haven Drill. Will bore in center of 30 in.
Two Ensley Drills.
One Vertical Boring Mill, bore from 26 to 90 inches.
One Turn Table and Boring Mill, 11 feet between [columns.
One Travis Boring Mill.
One Merrill Compressed Air Hammer, Hotchkiss
One Upright Drill, to the center of 61 in. [Patent.
One " " " " " 42 in.
Eighteen Drilling Machines.
Ten Bench Lathes.
One Bogardus Mill, No. 5.
One Bogardus Mill, No. 2.
One Root Blower, No 1.
One Sturtevant Blower, No. 2.
One Large Power Punch for bridge work.
One 3000 ton Hydraulic Press and Pump.
One Dudgeon Beam Punch.
One Hand Punch. Pope's patent.
Three Vacuum Tanks, 6 ft. x 12 ft.
One hundred Vises.
Five Portable Forges.
Colton Drawing Machine.
One Knowles Special Pump, No. 7.
One Guild & Garrison Pump, No. 3.
Six Hardick Pumps, from No. 0 to No. 4. New.
One Woodward Pump, No. 1.
7900 lbs. ¾ Plate Iron, for safes.
Two Bliss & Williams Presses.
Five smaller.
A full line of Woodward Steam and Fire Pumps.
One hand-power Paper Cutter.

J. GRAY'S MACHINERY DEPOT,

37 Dey Street, New York, U. S. A.

IRON-WORKING TOOLS FOR SALE.

The following Tools of PORTLAND MACHINE WORKS, Portland, Me.:

One large ENGINE LATHE, 60-in. swing, 32 feet length of ways; triple geared compound rest, spindle in head-stock 8 in. next to bearing cone, 5 steps, 4 in. best rod feed, crop feed, spindle in tail stock 5 in., crank pin borer. All in first-rate order. Price, $2200. Built by Elden Gamman.

One COMPOUND PLANER or SHAPER, quick return, 16-in. stroke, with vise, front angle iron and vise will swivel in any direction, to any degree; circular bars, centers and table cone, 4 steps, 3½ in. belt is adjustable at all points of wear. In first-rate order; good as new. Weighs 6900 pounds. Built by Portland Machine Works for their own use. Price, $800.

One SLOTTER, built by Gage, Warner & Whitney, 16-in. stroke, circular or top table 36 in. diam. x 2¾ in. thick, second table 36 in. square x 3¾ in. thick, third table 30 in. x 48 in. x 4 in. thick; power feed on two upper tables, hand feed on lower; slotting bar 6 in. thick, 6 in. on front, 11 in. on back, 7 ft. 6 in. long; drive pulley 21 ft. x 6 in., cone two steps, 6 in. belt, gear 46 in. x 4½ in.; 9 to 1 fly-wheel, 48 in. diam. Built 1865. Weight about 7 tons. In fair condition. Price $800.

One MASSEY STEAM HAMMER, 300 pounds, double-acting cylinder 6 in. by 16 in. Good as new. Price $450.

One ROOT BLOWER, will melt 3½ tons iron per hour at 300 revolutions per minute. Paint not soiled on this machine; first-rate order. Price $275.

One new UPRIGHT DRILL, built by Elden Gamman; power feed with drill to center of 46 inches; back geared, 4 steps cone. A very fine tool. Price $600.

One large BORING BAR, 18 in. diam., 15 ft. long; self-feeding, with two gibed heads and flange for boring large cylinders. Price $185.

One lot of IRON PULLEY PATTERNS, from 5 in. diam. to 42 in., comprising fifty patterns average diam. 16.83 in., average width 7.88 in.; nicely fitted crooked arms, fine style. Price for the lot, $500.

Also, Engine Patterns, Gearing, Mill Patterns, Building Patterns, Valves, &c. All will be sold for less than half the cost of production. Inquire of

RICHARD PHENIX, Portland, Me.,
Managing Trustee.

The Firm of Boyd & Chase,

Manufacturers of Oil Stones, 107th street and Harlem River, New York, was dissolved Dec. 6, 1880.

The business will be continued by

GEORGE CHASE.

House to Exchange for Hardware.

The owner being permanently engaged in business at the West, will sell his dwelling in Elizabeth, N. J., cheap for cash or in exchange for Hardware. The house is near business centers, a pleasant walk of three minutes from Depot. The lot is 57 feet front, shaded by four handsome trees; in the rear are choice fruit trees and grape vines. Has a good well and cistern, in addition to aqueduct water. Ten rooms in the house and all modern improvements and conveniences. A very desirable home for anyone doing business in New York. Letters addressed to

"EXCHANGE,"

Office of *The Iron Age*, 83 Reade St., New York, will receive the personal attention of the owner's agent, who will be in New York about Dec. 20th.

VALUABLE WATER FRONT ON EAST RIVER,

Between Eighth & Twenty-third Sts.,

FOR SALE.

Suitable for iron works or manufacturers, where large water facilities are required. About 50 lots, including land under water.

CHAS. S. BROWN, 77 Liberty St., N. Y.

Active or Silent Interest can be Obtained

In a well-established Agricultural Implement manufactory, including Foundry and Saw Mill. A complete works, situated in a flourishing New England town. Trade thoroughly built up and very prosperous. Will make favorable terms, for reasons which will be given. This is a rare opportunity for a lucrative investment. Address

AGRICULTURAL,
Office of *The Iron Age*, 83 Reade St., New York.

Special Notices.

TO CAPITALISTS.

WANTED

To Borrow from $200,000 to $250,000

for ten years, or longer, on a mortgage on over 12,000 acres Coal and Ore lands, ore interests and furnace plant in Pennsylvania, possessing unusual facilities for making iron of a fine quality very cheap. Interest payable annually. $50,000 of the money to be paid when the titles are proven, and the mortgage executed; the remainder as needed in the erection of a furnace or the improvement of the property. A Sinking Fund for the liquidation of the mortgage to be created, to which 10 % of the same shall be placed annually. To a party furnishing the money a quarter interest in the company will be given clear. For further particulars address

IRON, Box 142,
Office of *The Iron Age*, No. 83 Reade St., N. Y.

HAVE YOU READ THIS?

JENNINGS' DISCOUNT TABLES.

(2 % to 85 % and all the combinations.)

We find them correct and wonderfully "labor saving."—Sargent & Co., New York.

"Your discount tables are all you claim for them." T. W. Root, with Russell & Erwin Mfg. Co., Toledo, O.

Counting House Edition	$2 00
Pocket Edition, Cloth Bound	1.00
Pocket Edition, Paper Covers	.50

Currency may be sent by mail at publishers' risk.
Address, S. H. JENNINGS, Deep River, Conn.

FOR SALE.

The Best Retail Hardware Stock and Stand in Kansas City

Is doing a good business.

PRESENT STOCK ABOUT $20,000.

Such an opportunity as this, for a couple of active, hard-working young men, with $20,000 or $30,000 capital, is seldom offered. Upon such goods as have advanced extravagantly, we will make such discounts from the present market rates that no one need hesitate about buying the stock from fear of a decline in prices. Address

J. E. FORBES & CO.,
Kansas City, Mo.

For Sale.

FOUNDRY AND MACHINE SHOP. Established 1842. Well stocked with Patterns and Tools. Business good. Satisfactory reasons for selling. Address A. L. VAIL,

Middletown, N. Y.

For Sale.

One pair CHILL ROLLS, 25 inches diameter, 50 inches long; necks, 16 inches diameter, 13½ inches long; wabbler, 14 inches diameter, 7½ inches long.

One pair PINIONS, 25 inches diameter, 30 inches to outside of shrouds; necks and wabblers same as on chill rolls.

Six COUPLING BOXES, for above rolls and pinions.

One POPPET VALVE ENGINE, 20-inch bore, 6-foot stroke, with cast-iron fly-wheel in eight sections, 16 feet diameter; rim of wheel, 11 x 12 in. Engine is now in position at our mill.

BRITTON IRON & STEEL CO.,
Cleveland, Ohio.

For Sale.

Hardware Business of 20 years' standing. Stock will invoice about $10,000. Fresh and in good condition. To a party with the money this is an opportunity that seldom offers.

For particulars inquire of

JOHN BINDLEY,
186 Federal street,
Allegheny City, Pa.

For Sale.

Stock of hardware, stoves and implements, and store furniture, in one of the best towns in Kansas.

Address HARDWARE,
Box 366, Salina, Kansas.

For Sale.

HARDWARE.—The controlling interest or the whole of a Jobbing Hardware House, already established and doing a profitable business; located in one of the large Western cities. For further particulars, address C. A.,
Office of *The Iron Age*, 83 Reade St., New York.

For Sale.

A complete stock of Shelf and Heavy Hardware, located in a live town in Central Ohio. Established 1850. "Good Payments" For particulars address D. H., BOX 1077

Lima, Ohio.

For Sale.

The undersigned offers for sale his Hardware Business, with or without Dwelling attached, in a highly prosperous town of 3500 inhabitants in Central Pennsylvania; 200 new dwellings needed next summer. The business is for sale only on account of bad health. For further information, address

OPPORTUNITY,
Office of *The Iron Age*, 83 Reade St., N. Y.

For Sale.

LARGE SLOTTER, 6 ft. between Columns, 4-ft. Table, stroke 18 in., ind. cross and circular movements. A heavy, well-built tool; in first-rate order; will be sold low. Photo. on application.

A. G. BROOKS & WINEBRENER,
261 N. Third street, Philadelphia.

FOR SALE,

Job Lots and Bankrupt Stocks Hardware.

Great bargains offered to the trade.

A. W. WHEELER,
141 Lake St., Chicago, Ill.

ENGINE AND BOILER FOR SALE.

Steam Engine, 6 x 15, with 25-horse-power boiler, feed pump and heater, nearly new and in good order. One (1) second-hand "Peck" Lifter, not geared; will raise hammer of 300 lbs. in weight.

BEECHER & PECK,
Lock Box 120, New Haven, Conn.

ENGINE BUILDERS, ENGINEERS, ENGINE Owners, send postal for circular describing the most powerful, most sensitive and only perfect engine governor in the world. Address

THE ALLEN GOVERNOR CO.,
Boston, Mass.

Special Notices.

Second-Hand and New

Machinists' Tools.

January 5, 1881.

One Engine Lathe, 90 in. x 20 ft.	Ames, new.	
One Engine Lathe, 36 in. x 24 ft.	Ames, new.	
One " "	32 in. x 16 ft.	Ames, new.
Two " "	24 in. x 12 ft.	Ames, new.
One " "	20 in. x 12 ft.	Ames, new.
Two Engine Lathes, 18 in. x 8 ft.	Jones & Lamson.	
Two Engine Lathes, 18 in. x 7 ft.	" " new.	
Two Engine Lathes, 19 in. x 8 ft.	Pond, new.	
Two Engine Lathes, 19 in. x 12 ft.	Pond, new.	
One Engine Lathe, 16 in. x 6 ft.	New Haven.	
One " "	16 in. x. x 6 ft.	Ames, new.
One Engine Lathe, 15 in. x 6 ft.	Cady, good order.	
One Engine Lathe, 14 in. x 5 ft.	Harris, good order.	
One Engine Lathe, 14 in. x 4½ ft.	Putnam, good order	
One Engine Lathe, 11 in. x 5 ft.	Prentice, new.	
One Engine Lathe, 11 in. x 4 ft.	Prentice, new.	
Two Fox Lathes.		
Six Hand Lathes, 11, 14 and 16 in. x 4½ to 7 ft. bed.		
One 24-in. Shaper.	Hendey Mch. Co., new.	
Four 9 in. " "	Hewes & Phillips.	
One 15-in. stroke Shapers.	Hendey Mach. Co., new.	
One 24 in. x 6 ft. Planer.	Ames.	
One 24 in. x 5 ft. Planer.	Whitcomb, new.	
One 24 in. x 5 ft. "	Moore & Wyman.	
Two 36 in. Drills, bk. geared and self-feed.	L.W. Pond.	
One 34 in. Drill, Bk. Geared.		
Two 24 in. Drill, bk. geared or self-feed.	Ames, new.	
Three 20 in. Drills.	Prentice, new.	
One 6-Spindle Horizontal Drilling Machine.		
One 5-Spindle Horizontal Drill.		
One No. 4 Wilder Punch Press. New. Geared.		
One No. 6 " Shear Geared. "		
Belting, Shafting, Pulleys and Miscellaneous Machinery.		

E. P. BULLARD, 14 Dey St., New York,

GENERAL EASTERN AGENT FOR

Akron Iron Co.'s Hot Polished Shafting.

Bissell & Welles,

Wholesale Hardware Auctioneers,

83 Chambers and 65 Reade Sts., N. Y.

Sales held weekly for the trade. Consignments solicited. We refer to the leading Manufacturers and importers.

BUSINESS CHANCE.—WE OFFER FOR SALE a factory for the manufacture of Tin Stamped, Japanned and Pieced Ware, containing all the necessary machinery and dies for same. The business is well established, and will be sold on easy and favorable terms, or will sell the machinery and dies without the buildings if desired. Address TINWARE,

Office of *The Iron Age*, 83 Reade St., New York.

To Manufacturers and Hardware Merchants.

WANTED.

By a man of experience in positions of trust, who has a knowledge of the requirements of the export trade in American Hardware, having resided and traveled abroad for business, also held for several years past a responsible position in a manufactory, a new engagement as office man or travel to solicit trade and establish connections in foreign countries.

Address, ENTERPRISE,
Office of *The Iron Age*, 83 Reade Street, N. Y.

Wanted.

HARDWARE.—Situation as Manager, Buyer or Head Salesman in the Hardware business. Am thoroughly posted in all its branches and with the trade in the West and Far West; been head salesman of late with the Chicago Stamping Co., and before that with Wm. Blair & Co., both of Chicago, to whom I would respectfully refer.

Address A. GUSTOFF,
Care J. B. Mayo, Palmer House, Chicago, Ill.

Wanted.

The undersigned wishes to buy an 8 or 9-inch Train of Rolls for Rolling Steel, with Boiler and Engine suitable to run the rolls. Must be in complete running order.

Address, stating terms and capacity,
E. M. GRANT,
Cleveland, Ohio.

Wanted.

A man competent to take charge of a Plate Mill. He must understand the heating department thoroughly, as well as being familiar with Rolling, and all other departments of the manufacture of Plate Iron. Answer, stating qualifications in detail, and salary.

Address PLATES,
Care of Knight & Smith,
N. E. cor. 2d & Vine Sts, Phila.

Wanted.

An experienced Hardware Man desires to act as buyer for country hardware merchants. Best references furnished.

Address "HARDWARE,"
Office of *The Iron Age*, 83 Reade St., New York.

Wanted.

TO PURCHASE 8 or 10 NAIL MACHINES. Please address, stating size, condition and price,

NAILER,
Care of Jos. D. Weeks,
Office of *The Iron Age*, 77 4th Ave., Pittsburgh, Pa.

Wanted.

A good salesman to sell to the Hardware Trade in the West. One acquainted with the plumbing trade preferred.

Address, B, Box 65,
Office of *The Iron Age*, 83 Reade St., New York.

Wanted.

A second-hand Pipe-threading and Cutting Machine to cut from ½ inch to 2½ inch. Must be in good order and price low.

Address, E. M. BIRDSALL & CO.,
Penn Yan, Yates Co., N. Y.

SITUATION WANTED—By a young man in a hardware manufacturing establishment, or to represent one or more first-class Eastern establishments in Pittsburgh. Is used to the Saddlery, Carriage and general Hardware business. Is connected with a hardware jobbing house at present. No. 1 reference given. Address HARDWARE,

Office of *The Iron Age*, 77 4th Ave, Pittsburgh, Pa.

DO YOU WANT IT? Agricultural Implement trade, with MACHINE SHOP and FOUNDRY, doing a good and growing business. Well advertised; good market for products; healthy location. "MACHINIST." care Brown, Dugan & Co., St. Louis, Mo.

Special Notices.

ROOMS OF

THE HARDWARE BOARD OF TRADE,

LIMITED,

Incorporated A. D. 1877.

Nos. 4 and 6 Warren St., New York.

To the Trade and Public:

We are compiling, preparatory to issuing in January, 1881, a limited number of strongly bound books, to contain the names and financial standing, as well as credit ratings, of some Fifty Thousand dealers in Hardware, Cutlery, Guns, Tinware and Stoves, Metals, Iron, Foundries, Machinery of all kinds (including Sewing Machines), Iron and Metal Pipe, Brass Fitting, Plumbers and Dealers in Plumbers' Supplies, and other trades kindred to these throughout the United States.

A large expenditure of money and the very best means have been used to obtain reliable information for the work, and those desiring it can depend upon the information being fresh and largely drawn from those selling the firms, corporations and individuals rated, and the information is as reliable as it is possible to obtain for such a work.

For Wholesale Dealers and Manufacturers it is the most desirable work of the kind, as it is prepared with great care, and should be consulted where extended credits are asked. All are not safe for credit because apparently prosperous, and detailed information given at the office will largely aid in forming correct judgments.

The Board of Directors of this company have placed a limit to the number of these books to be issued, and under no circumstances will orders placed beyond that number be filled.

The subscription price to the book is placed at THIRTY DOLLARS. *All orders must be accompanied by draft on New York for the amount.*

We respectfully ask all who desire a copy of this book to forward their orders at once, as they will be entered and filled in the order received.

THE HARDWARE BOARD OF TRADE, Limited,

By JAS. H. GOLDEY, Actuary.

To Railroad Engineers, Importers and Others.

DAVID OWEN,

Inspector of Steel and Iron Rails,

Merthyr Tydfil, England,

Undertakes the inspection of Steel and Iron Rails, Permanent Way Materials, &c., &c., in England, Belgium and Germany. Thoroughly practical, of many years' experience. Can give very best of references from chief railroad engineers, merchants and others who have employed me to inspect their railroad materials during manufacture and delivery for the last 10 years.

Correspondence solicited. Instructions by mail or cable punctually attended to.

ON HAND AND FOR SALE.

Horizontal Boiler, 42 in. x 10 ft., 28 4-in. tubes, ⅜ shell, 7-16 heads.
Horizontal Boiler, 42 in. x 10 ft., 90 2-in. tubes, 5-16 shell, ⅜ heads.
Vertical Boilers, with Bases, Grates and Fixtures:
42 in. x 7 ft., 90 2-in. tubes, shell and fire-box ⅜ in., heads ½ in. New.
36 in. x 6 ft., 80 2-in. tubes, shell and fire-box 5-16 in., heads 5-16 in. Rebuilt.
30 in. x 6½ ft., 47 2-in. tubes, shell and fire-box 5 16 in., heads 5-16 in. New.
30 in. x 6 ft., 55 2-in tubes, shell and fire-box 5-16 in., heads 5-16 in. Second hand.
15½ x 36 Horizontal Engine, 9 ft. x 13 in. band wheel. Jacob Naylor.
12 x 24 Horizontal Engine, segment fly wheel 4500 lbs James Moore.
10 x 20 Horizontal Engine, band wheel 7 ft. x 12 in.
12 x 12 Vertical Engine, band wheel 54 in. x 12 in.
7 x 12 Vertical Engine, band wheel 42 in. x 10 in.

A. G. BROOKS & WINEBRENER,
261 North Third St., Philadelphia.

THOSE WISHING TO BUY OR HAVE FOR SALE SECOND-HAND

PRESSES or DROP HAMMERS

will please communicate with

N. C. STILES,
Middletown, Conn.

The Sherman Process Co.

9 Pemberton Square, Boston, Mass.,

Issue Licenses to use the Process for the Manufacture of Iron and Steel

In the Bessemer Converter, Crucible, Siemens-Martin, Puddling, Blast and Cupola Furnaces.

The use of this Process improves the quality of the product, saves fuel and labor, and does not require any change in furnace or manner of working

See page 17 of *The Iron Age* of Oct. 25th, 1877.

Slate Planer Iron.

Size of Bed 12 ft. x 4 ft.; price with countershaft, $500. Also 10,000 ft. 3 in. and other sizes Wrought Iron Steam Pipe; 2000 ft. 6-in. Cast-Iron Heating Pipe. For sale by

A. PURVES & SON,
South and Penn Sts., Phila.

Europe.

Matheson & Grant's

Address is

32 Walbrook, London, England.

Engineers and Commission Agents for all business relating to engineering and metals in Europe.

Telegraph address,

MATHESON, WALBROOK, LONDON.

OPEN-HEARTH STEEL.—A gentleman having six years' experience in one of the leading open-hearth works of this country will be open for an engagement January 1, 1881. Is competent to design, superintend construction and manage works when completed. Address

OPEN-HEARTH STEEL,
Office of *The Iron Age*, 83 Reade St., New York.

CRUCIBLE CAST STEEL.

Wanted, by an old-established Sheffield firm, a responsible agent with good connections and references, who would buy Tool Steel, &c., for his own account. Apply

BOX 40, Post Office,
Sheffield, England.

Sanderson Bros. Steel Co.

A limited number of shares for sale by

EDWARD FRITH & SON,
241 Pearl street, New York.

Trade Report.

Office of THE IRON AGE,
WEDNESDAY EVENING, January 5, 1881.

During the past week the financial markets have been active. All classes of securities were strong, with a buoyant tendency until Monday, when the bears got at their work, and there was a sharp downward reaction in the stock market. The local money market has been very firm, call loans ranging from 4 % @ 6 %, and a commission of 1-16th % per day.

The importations of specie and bullion at this port during the week ending December 30, inclusive, were $2,125,225, consisting of $1,878,134 in gold and $247,091 in silver, as against a total of $407,758 for the week ending January 3, last year. The importations since the 1st of January and since the 1st of August compare as follows with the movement during the corresponding periods last year :

	Since Jan. 1 to Dec. 30	
	1880.	1879.
Gold	$68,732,472	$75,859,697
Silver	5,655,116	8,317,067
Total	$74,387,588	$84,176,764
	Since August 1	
	1880.	1879.
Gold	$66,758,105	$75,027,972
Silver	2,460,610	2,977,514
Total	$69,218,715	$78,005,486

Government bonds have been strong and ⅛ higher. State bonds are steady. Railroad mortgages are strong and in good demand, prices advancing ½ % @ 6 %, part of which was subsequently lost. We give below the closing quotations of governments.

The State markets opened strong and continued an upward course, as noted, until the collapse on Monday. Part of the rapid decline on that day was subsequently recovered. The principal dealings have been in Western Union, Erie, Lake Shore, New Jersey Central, New York Central, D. L. & W., Union Pacific, Wabash and Pacific Mail. We give below the quotations of stocks on the active list at the close of business to-day.

The bank statement makes the following comparison of aggregate averages for the past two weeks :

	Dec. 24.	Dec. 31.	Comparison.
Loans	$292,417,900	$297,756,700	Inc. $5,838,800
Specie	57,086,000	58,047,900	Inc. 961,900
Legal t'nd'rs.	13,300,900	12,796,600	Dec. 504,300
Tot. reserve.	70,386,900	70,844,500	Inc. 457,600
Deposits	267,068,000	272,466,900	Inc. 5,398,900
Reserve required	66,767,000	68,116,725	Inc. 1,349,725
Surplus	3,619,900	2,727,775	Dec. 892,125
Circulation	18,431,400	18,408,200	Dec. 23,200

FOREIGN IMPORTS.

For the week ended December 31 :

	1878.	1879.	1880.
Total for week	$5,564,356	$8,590,830	$5,016,291
Prev. reported	281,315,788	332,401,862	466,037,050
Since Jan. 1	$286,880,144	$340,992,692	$471,053,341

Included in the imports of general merchandise for the week were articles valued as follows :

	Quantity.	Value.
Brass goods	26	$2,393
Bismuth	8	7,341
Bronzes	14	2,926
Chains and anchors	26	556
Copper	..	12,803
Cutlery	62	19,423
Pins	3	553
Guns	82	13,212
Iron, hoop, tons	10	552
Iron, pig, tons	1,411	38,462
Iron, sheet, tons	11	1,064
Railroad bars	4,692	31,951
Iron ore, tons	736	2,111
Iron, other, tons	507	18,945
Metal goods	109	13,820
Nails	22	1,099
Needles	10	3,114
Old metal	..	4,807
Plated ware	1	20
Saddlery	10	1,640
Steel	15,423	75,391
Spelter	55,172	2,146
Silverware	6	299
Tin, boxes	19,498	87,409
Tin, 4,617 slabs ; 458,890 lbs	..	95,566
Wire	1,842	15,981
Zinc	88,575	4,033

EXPORTS, EXCLUSIVE OF SPECIE.

For the week ended January 2 :

	1878.	1879.	1880.
For the week	$5,782,678	$6,745,856	$7,648,993
Prev. reported	341,128,200	346,507,874	406,077,685
Since Jan. 1	$346,910,873	$353,253,730	$413,726,678

Government bonds close strong at the following quotations :

	Bid.	Asked.
U. S. 6's 1880 registered	—	—
U. S. 6's 1880 coupon	—	—
U. S. 6's 1881 registered	101⅜	101⅝
U. S. 6's 1881 coupon	101⅜	101⅝
U. S. 5's 1881 registered	100¼	100½
U. S. 5's 1881 coupon	101⅜	101⅝
U. S. 4½'s 1891 registered	111⅞	112⅛
U. S. 4½'s 1891 coupon	111⅞	112⅛
U. S. 4's 1907 registered	112⅜	112⅝
U. S. 4's 1907 coupon	112⅜	112⅝
U. S. Currency 6s 1895	128	—
U. S. Currency 6s 1896	129	—
U. S. Currency 6s 1897	130	—
U. S. Currency 6s 1898	131	—
U. S. Currency 6s 1899	132	—

The following were the closing quotations of active shares :

	Bid.	Asked.
Arizona	4½	4¾
American District Telegraph	55	56
Atlantic and Pacific Telegraph	35	—
Alton and Terre Haute	—	42
" " " Pref	—	116
Burlington and Quincy	180⅜	180¾
Caribou	2	2½
Canada Southern	72	72¼
Col., Chic. and Indiana Central	20⅜	20⅝
Chicago, St. Louis and New Orleans	40½	41
Chesapeake and Ohio	23⅛	23¼
" " 1st Pref	33½	34¼
" " 2d Pref	24¾	25
Chicago and Alton	154	155½
Delaware, Lack. and Western	108½	108⅝
Delaware & Hudson Canal	91¾	92
Express—Adams	123	125
" Wells, Fargo	112	114
" American	62½	63
" United States	52	53
Excelsior Mining	6¼	6½
Erie	48½	48⅝
" Pref	90⅞	91¼
Houston and Texas	60	—
Homestake	29½	30
Hannibal and St. Joseph	46¼	47¼
" " Pref	103	103½
Indianapolis, Bloom. and Western	51	52½
Illinois Central	125½	126
Kansas and Texas	42⅛	42½
Little Pittsburgh	2	2½
Lake Shore	130¼	130½
La Plata	9	—
Louisville and Nashville	39½	39¾
Morris and Essex	120⅝	121½
Mobile and Ohio	21	22
Marietta and Cincinnati Pref	8¾	9
" " " 2d Pref	6	9¼
Manhattan Elevated	34	34⅛
Michigan Central	121⅞	122⅛
Nash. and Chattanooga	70½	71
Northern Pacific	33¾	34
" Pref	66¼	66½
New Central Coal	28	29
New Jersey Central	84⅛	84⅞
New York Central	150⅜	150⅝
Northwest	125⅛	125⅜
" Pref	140¼	141
Ontario Silver	33	34
Omaha	45½	46
" Pref	96¾	97
Ohio	37⅛	37¼
" Pref	98	99
Ohio Central	23½	23⅝
Panama	212	219
Quicksilver	12½	13
Rock Island	136	137
Reading	55¼	55⅜
Rome, Watertown & Og	29	30
Silver Cliff	3½	—
Stormont	1⅞	2
Standard	21¾	22½
Sutro Tunnel	1¼	1⅜
St. Paul	110¾	111
" Pref	122⅞	123
St. Paul and Duluth	34	36
" " Pref	71	73
San Francisco	44⅞	45
" " Pref	62¼	63½
" " 1st Pref	98½	99
Union Pacific	110⅛	110⅜
Wabash and Pacific	43⅜	43⅝
" Pref	84⅛	84½
Western Union	85½	85⅝
Iron Mountain	53⅛	53⅜
Erie and Western	40¼	40¾
Col., Chic., Cin. and Indianapolis	95½	95⅞
Denver and Rio Grande	86⅞	87
Oregon Navigation	135	135¼
Texas Pacific	42½	43½
Colorado Coal	38	38½
Central Pacific	91¼	91⅝
New York Elevated	124	125
Ontario and Western	29¼	30
Metropolitan Elevated	107½	108½

MINING STOCKS.

The following were the closing quotations of mining stocks :

	Bid.	Asked.
Amie	50	51
Alta Mont	1.75	2.00
American Flag	23	26
Bell Isle	43	50
Bechtel	85	90
Bonanza C	26	—
Buckeye	20	21
Bull Dom	3.75	4.15
Calaveras	19	20
California	1.25	1.30
Consolidated Virginia	2.00	2.05
Chrysolite	6.12½	6.25
Cherokee	1.61	1.65
Dunderberg	60	61
Dahlonega	8	10
Durango	15	—
Eureka C	20.00	—
Fa. DeSmet	7.00	8.00
Great Eastern	23	25
Gold Stripe	2.40	—
Goodshaw	—	90
G. Prize	1.00	—
Granville	6	7
Green Mountain	4.90	5.00
Hukill	1.45	1.50
Independence	25	30
Iron Silver	3.30	3.50
Lacrosse	27	30
La Plata	9.25	9.50
Lucerne	13	14
L. Chief	82	83
Little Pitts	2.00	2.10
Mariposa	65	90
Moose	1.30	1.35
Navajo	1.10	1.15
North Star	68	70
Red Eleph	47	—
S. Bulwer	33	34
Silver Cliff	3.35	3.50
Scorpion	26	30
Unadilla	11	12
Willshire	97	99

OUR CHICAGO BRANCH OFFICE.

For the accommodation of the Western trade, we have opened a branch office in Chicago, at Nos. 36 and 38 Clark street, corner of Lake street. It is under the management of Mr. Henry Smith, who has been for many years connected with our New York publication office, and whom we cordially commend to our Western friends. The increasing importance of our interests in the district of which Chicago is the business center, renders the establishment of a branch office at that point a convenience to our customers and a necessity to us. As this branch is a part of our publication office, business conducted through it will be on precisely the same basis as with our New York office.

GENERAL HARDWARE.

Business continues quiet, and little improvement is looked for before the latter end of this month or early in February. During the week some important trade meetings have been held, the result of which will be found below.

The demand for foreign Hardware is very light, but values are well sustained. Hermann Boker & Co. are in receipt of a cable dispatch announcing that the German government have increased the duty on pearl scales, the result of which will be an advance in the price of Pearl Pocket Knives of 5 @ 10 per cent.

The demand for Nails during the week was very light. We continue to quote 10d. to 60d., $3 per keg, net, in small lots. Orders for 200 kegs and upward are subject to an allowance of 10 cents per keg.

The old firm of Heaton & Denckla, of Philadelphia, is dissolved by limitation, and the business will in future be conducted under the style of Heaton & Denckla Hardware Company. We take the following particulars regarding the old and the new firms from the *North American* of the 1st inst. :

The firm of Heaton & Denckla is dissolved by limitation. Augustus Heaton retires and C. Paul Denckla and C. Reuben Denckla continue as the Heaton & Denckla Hardware Company, hardware commission business, 507 Commerce and 510 North streets. Mr. Augustus Heaton, who now retires after a long and an honorable business career, brought to the office of this paper 40 years ago the notice of the establishment of a firm that in all the time that has since elapsed has never failed to meet an obligation. Such a record makes the more important the card from Mr. Heaton, in which he says : "In withdrawing from a firm that he established 40 years ago, the undersigned cannot but feel a profound regret at parting with the friends and correspondents with whom for so many years he has held the most kindly relations. This regret is mitigated to a degree, however, in the fact that he leaves behind him in the new firm of Heaton & Denckla Hardware Company, C. Paul and C. Reuben Denckla, who, brought up to the business under his immediate supervision, will continue to uphold for the standard of the new firm the same principles of integrity and good faith which actuated and controlled the firm of Heaton & Denckla in all of its transactions."

Oliver Ames & Sons' Corporation, North Easton, Mass., have reduced the prices of the following goods on their price list of July 1, 1880 :

Nos. 112 to 197, Nos. 548 to 582, Nos. 598 to 702 } 90 cents per dozen.
Nos. 730 to 752, Nos. 813 to 816, Nos. 838 to 865 } 75 cents per dozen.

On and after the 3d instant they will allow on all of their goods a discount of 12½ per cent. from list prices of July 1, 1880, and to all parties whose net purchases exceed $500 in six months an extra discount of 7½ per cent. will be allowed.

The Stanley Rule and Level Co. have issued the following discount sheet. The changes of importance are reductions in prices of Rules, Plumbs and Levels, Try Squares, Gauges and Bevels :

[Attach to our Price List of January, 1879.]

DISCOUNT SHEET, STANLEY RULE AND LEVEL CO., January 1, 1881.

Catalogue pages.	Discount per cent.
51, Awl Hafts	40
51, Awls, Patent Pegging	40
48, Brad Awls, Handled	25
31, Bevels, Sliding T	50
31, " Patent Flush, Eureka	20
47, Box Scraper, Adjustable	20
48, Chalk-line Reels and Awls	25
51, Carpenters' Tool Handles	25
59, Cattle Ties	20
47, Countersinks, Wheeler's Patent	20
43, Dado, Filletster, Plow, &c., combined	20
43, Dado, Adjustable	20
32 to 34, Gauges	50
48, Handles, Brad Awl	25
56, Handles, Plane	40
56, Handles, Saw	40
35, Handles, Screw Driver	50
60, Hammers, Magnetic	25
62, Hammers, Tack No. 4	25
61, Hammers, Steak	25
60, Hammers, Upholsterers	25
25, Level Glasses	65
52&53, Mallets, Hickory / Lignumvitæ	10
44, Mitre Box, Improved	10
28, Mitre Squares, Improved	20
28, Mitre Try Squares, Improved	20
36 to 38, Planes, Bailey's Adjustable, Iron / Wood	20
39 to 41, Planes, the Stanley Adjustable, Iron / W'od	20
49, Planes, "Defiance" Adjustable	20
54&55, Planes, Leonard, Bailey & Co.'s "Victor" Adjustable	20
37, Plane Irons	20
40, Planes, Rabbet	20
47, Planes, Bull-nose Rabbet	20
44, Planes, Tongueing and Grooving	20
22, Plumbs and Levels, non-adjustable	65
23, Plumbs and Levels, patent adjustable	65
24, Plumbs and Levels, Nicholson's patent	20
24, Plumbs and Levels, Iron Frame	20
25, Plumbs and Levels, Machinists'	20
25, Pocket Levels	65
42, Plow, Filletster, &c., combined	20
42, Plow and Matching Plane, combined	20
45, Plumb Bobs, Adjustable	20
3 to 10, Rules, Boxwood, Stanley's	70
11, Rules, Ivory, Stanley's	60
9, Rules, Metric Graduations, Stanley's	60
12 & 13, Rules, Miscellaneous, Stanley's	60
14 to 17, Rules, Boxwood, Stearns'	60
18 & 19, Rules, Ivory, Stearns'	50
20, Rules, Miscellaneous, Stearns'	50
58, Sash Frame Pulleys	25
58, Sash Cord Irons	25
58, Scratch Awls, Handled	25
35, Screw Drivers, Varnished Handles / Black Handles	50 / 40
45 and 47, Spoke Shaves	30
46, Spoke Shave Cutters	30
62 to 64, Tackle Blocks, Rope and Iron Str'pped / Awning	40 / 40
45, Trammel Points	20
50, Tool Handles and Tools, Excelsior	30
16, Try Squares	50
27, " Improved No. 1	20
27, " " No. 2	20
26, " Plumb and Level	20
30, Try Square and Bevel, combination	20
29, Try and Mitre Square, Winterbottom's	20
38, Veneer Scrapers	20

Discount for cash. If paid within 30 days, 10 per cent. Terms cash, payable in current New York or Boston funds. Invoices remaining unpaid after 30 days from their date, are subject to our draft, payable at sight.

The Vise and Tool Manufacturers' Association held a meeting during the week at the office of Hermann Boker & Co., in this city. Solid Box Vises were advanced 5 per cent., and are now quoted discount 30 per cent. Hammers and Sledges were reduced in price, and are quoted discount 40 per cent. for Cast Steel and discount 30 per cent. for Steel Face. The balance of the list, including Picks and Mattocks, remains as heretofore.

At a meeting of the Cast Butt Manufacturers' Association, held in New York city on January 5, 1881, prices and terms as adopted September 23, 1880, were confirmed, excepting Narrow F. J. Butts, to be 45 per cent. ; Broad F. J. Butts, to be 45 per cent. ; Narrow L. J. Butts, to be 55 per cent. ; Broad L. J. Butts, to be 55 per cent. In addition to the discounts named above, an extra cash discount of 10 per cent. is allowed.

The Old Colony Iron Company will issue, in a few days, revised list and discounts for Shovels, &c., to correspond with the prices announced by the Oliver Ames & Sons Corporation.

The manufacturers of Copper Rivets and Burs advanced the price of these goods on the 1st instant to discount 33⅓ per cent., formerly discount 35 per cent. Brass Kettles were reduced 3 cents per pound on the 3d instant, as will be seen by the following circular :

NEW YORK, January 3d, 1881.

Dear Sir : We have this day fixed the price of Brass Kettles :

13 inches and under, per lb ..... 32c.
14 inches and over, per lb ..... 33c.

Terms of sale : 60 days' time, or two per cent. may be deducted for payments made within 10 days from date of invoice. A discount of 10 per cent. will be allowed to the purchaser of 500 pounds and upward at one time. Interest will be charged on all purchases not paid for within 60 days from date of invoice.

These prices are subject to change without notice, and no deductions will be made for stock in hands of purchaser when change in price is made.

WATERBURY BRASS CO.
BROWN & BROS.
EDWARD MILLER & CO.
C. G. HUSSEY & CO.
ANSONIA BRASS AND COPPER CO

We print below the revised discounts adopted by the Tack Manufacturers' Association, to take effect January 1, 1881 :

Discounts to apply to the Hardware List of April 2, 1880.

	Per Cent.
Swedes Iron, Upholsterers', Gimp and Lace Tacks	30
Tinned Swedes Iron, Upholsterers', Gimp and Lace Tacks	45
American Iron Tinned Tacks	55
Copper Tacks and Nails	30
American Iron Cut Tacks	25
Leathered Carpet Tacks	20
Brush Tacks	20
Swedes Iron Hungarian Nails	30
American Iron Hungarian Nails	30
Finishing, Trunk and Clout Nails	25
Tinned Trunk and Clout Nails	30
Common and Patent Brads	20
Cigar Box and Chair Nails	25
Basket Nails	25
Swedes Iron Machine Finishing Nails	25
Looking Glass Tacks	25
Picture Frame Points	25

For Tinned goods in Hardware list, where prices are not given, add 6 cents per pound.

In addition to the above discounts, 10 per cent. discount will be made, provided the account is paid on or before the 20th of the month following the month of sale, and a further discount of 2 per cent. will be made for cash, if paid in 15 days from date of shipment.

"The above discounts are, subject to change without notice."

We have received the following circulars :

PHILADELPHIA, January 4, 1881.

To the Trade : The undersigned have this day changed the discount on Mrs. Pott's patent Sad Irons to retail dealers as follows :

	Dis. per cent.
Double Pointed Detachable Wood Handle Irons	35
Square Back	40
Fixed Handle or Star Irons	40

F. o. b. in Philadelphia.

Very respectfully,

ENTERPRISE MFG. CO. OF PA.
AMERICAN MACHINE CO.

To the Trade : Please take notice that on and after this date the discount on our goods (excepting Sad Irons) will be 25 per cent. to retail dealers. Very respectfully,

ENTERPRISE MFG. CO. OF PA.

Agency of
JOSHUA WILKINSON & SON, Dudley, England.
337 Market street,
PHILADELPHIA, January 1, 1881.

Our trade prices until further notice will be as follows, net cash :

	per lb.
Solid Wrought Anvils	10 c.
Solid Box Wrought Vises	13½c.
Wrought Steel Faced Smiths' Sledges	11 c.
Smiths' Hammers	11½c.
Stone Sledges	11½c.
Turnpike Hammers, 2½ lb. and over	12½c.
Turnpike Hammers, under 2½ lb	13½c

Yours truly,
NEWLIN & YARDLEY,
Sole agents for the United States.

[*Circular No.* 7.]

TERRYVILLE, CONN., January 1, 1881.

GENTLEMEN : Please take notice that from this date the discount from Cabinet Locks and Keys will be 25 per cent.

Extra discount for quantity purchased during the season remains as heretofore.

The list price for the following numbers is advanced to "Catalogue list," as given below :

	A	B	C	D	E	F	G
1001							
Without Keys	$3.60	3.40	3.20	3.00	2.80	2.60	2.40
1021	H	I	K	L	M	N	O
Without Keys	$2.20	2.00	1.80	1.70	1.60	1.50	1.50

Respectfully, EAGLE LOCK CO.
Prices not guaranteed.

[*Circular No.* 8.]

TERRYVILLE, CONN., January 1, 1881.

GENTLEMEN : From this date the discount from our list of Trunk Locks and Keys will be 25 per cent. Please note the following change in list prices, to take effect to-day :

Nos.	5	8	08	9	11	12	14
	$0.70	.75	.75	.75	.90	1.00	1.10
Nos.	15	17	18	20	25	27	29
	$1.20	1.05	.95	1.20	1.50	1.50	1.10
Nos.	30	32	101½ tin	105	112	188½ tin	
	$1.50	.80	2.25	7.00	10.00	4.25	
Nos.	124	128	130	132	133	135	137
	$6.00	9.00	8.00	10.00	1.25	1.50	1.75

Prices not guaranteed.

Respectfully, EAGLE LOCK CO.

TO THE TRADE.

NEW YORK, Jan. 1, 1881.

We are instructed to quote Coes' Genuine Screw Wrenches of either make at 50 per cent. discount from list.

"Mechanics" Wrenches made by L. Coes & Co., and similar quality by A. G. Coes & Co., will continue to rate at 10 per cent. less than the "Genuine."

DURRIE & MCCARTY,
Agents for L. Coes & Co.
GRAHAM & HAINES,
Agents for A. G. Coes & Co.

NEW YORK, January 1, 1881.

To the Trade : Having made arrangements to sell the goods of Messrs. Hotchkiss' Sons' manufacture, we shall carry a full stock of them, and shall at all times quote the bottom prices. Mr. W. J. Lockwood, formerly representing them, has connected himself with us, and will represent them, in connection with our goods, to the trade. Thanking you for the liberal patronage bestowed on us, and hoping for a continuance of the same, we are respectfully yours,

GRAHAM & HAINES.

Office PENNSYLVANIA FILE WORKS,
Fourth street and Columbia avenue,
PHILADELPHIA, January 1, 1881.

We take this method of returning thanks to our many friends and the trade for their liberal share of patronage the last year, and promise that in the future, as we have in the past eighteen years of our existence, to furnish a standard American File and Rasp of the highest quality, and at as low a price as is consistent with a fair margin of profit.

Avoiding all combinations and guaranteeing quality, we shall, from time to time, advertise our price list, which we believe is the most equitable and has given the most satisfaction of any in the market, not only to domestic, but also foreign buyers.

Hoping the present general prosperity may continue, we remain, yours respectfully,

McCAFFREY & BRO.

The price list referred to above will be found in their advertisement on the 28th page.

105 CHAMBERS STREET, NEW YORK,
December 31, 1880.

To the Hardware Trade.—GENTLEMEN : Wishing to recognize in some public way the services of Mr. Charles B. Corwin, who has been faithful in my employ for a number of years in various departments of my business, I beg to announce that I have this day made arrangements to continue my business as heretofore, with Mr. Corwin in the management of my sales department.

Trusting that the new arrangement may result in increased satisfaction on the part of my customers, whose interests will be faithfully watched by Mr. Corwin in his department, and assuring the trade that I shall continue to give my personal attention to the entire business.

I remain, respectfully,
HENRY B. NEWHALL.

105 CHAMBERS STREET, NEW YORK,
December 31, 1880.

In connection with the accompanying circular, I beg to call the attention of my friends to the fact, that from this date I am personally interested in the success of Mr. Henry B. Newhall's business. I hope, therefore, that this will be borne in mind when placing orders for goods in our line.

Respectfully, C. B. CORWIN.

The Philadelphia Screw Company have changed their discounts to conform to the prices announced in our last issue.

The Table Cutlery Manufacturers' Association held a meeting last week, at which their list prices were in many instances revised. The particulars have not been announced, but we are informed that the changes in prices have been reductions from former figures, and that the trade will be furnished with the revised list at an early day.

We have received a communication from Furness, Bannister & Co., manufacturers of Table Cutlery, Newark, N. J., in which they say : "Although we are not in the Table Cutlery Manufacturers' Combination, we are at all times prepared to meet the lowest market prices for first quality goods."

Buck Brothers, Millbury, Mass., manufacturers of Chisels, Plane Irons, &c., inform us that their price lists and discounts for the ensuing season will be the same as ruled last year. They use the price book issued by them in 1876.

S. H. & E. Y. Moore, Chicago, Ill., illustrate in their advertisement on the 33d page their "Climax" Barn Door Hangers adapted to wood track, to which we invite the attention of the trade.

Durrie & McCarty, Nos. 97 Chambers and 81 Reade streets, have just issued their 1881 illustrated catalogue and price list. The book contains 128 pages, and is provided with a marginal as well as page index. Among the goods illustrated are the various patterns of Horse Shoes manufactured by the Rhode Island Horse Shoe Co. ; Horse Nails, Toe Calks, Anvils and Vises, the Winsted Hoe Co.'s goods and Agricultural Implements of the Auburn Mfg. Co. ; Robert Mann & Sons' Axes, "Pennsylvania" and "Quaker City" Lawn Mowers ; L. Coes & Co.'s Wrenches ; Witherby Tool Co.'s Edge Tools, Augers and Bits, Rules, Hammers and Hatchets ; the full line of A. E. Dietz Locks, including Cabinet Locks, Bronze Metal Spring Padlocks, Mortise and Rim Night Latches, Store Door Dead Locks, Key Blanks, &c. They also show a line of Scandinavian Padlocks, specialties of the Enterprise Mfg. Co., of Pennsylvania, Meat Cutters, Hollow Augers, Wrought Iron goods, &c. The book is printed in clear type on tinted paper, and is bound in flexible cloth cover.

A. E. Dietz has also issued, for the convenience of his customers, a separate catalogue of his specialties, containing the list prices and illustrations of Locks, Latches, Keys, &c., referred to in the catalogue mentioned above.

Charles O. Kemp, for the last ten years connected with Brown Brothers, has made an engagement with John J. Tower.

The manufacturers of Augers and Bits and Chisels and Drawing Knives held meetings in this city to-day, at which existing prices were confirmed.

BRITISH IRON MARKET.

[*Special Report by Cable to The Iron Age.*]

LONDON, Wednesday, January 5, 1881.

Scotch Pig.—Immediately after our last cable report was dispatched prices went up, and have since been steadily firm, the market being strong, with a fair business doing. The following are maker's quotations, showing an advance of 1/ on Glengarnock and Coltness, 2/ on Eglinton, and 2/6 on Gartsherrie, over last week's figures :

Gartsherrie	63 6
Coltness	63 6
Glengarnock	58/
Eglinton	54/

Manufactured Iron.—There is no change to note in the condition of the market, which remains quiet, with nominal quotations. Best Staffordshire Bars £7 @ £7. 10/.

Steel Rails.—Prices rule firm under a steady demand, with a fair business doing. Ordinary Sections are quoted £6. 5 @ £6. 10/.

Iron Rails.—A decided improvement has

taken place in the market, and prices are firm with fair transactions. Welsh are quoted £5 @ £5. 10/.

Old Rails.—No change to note, prices ruling steady, with light offerings and small sales. We repeat quotations £3. 10/ for Old Ts.

Scrap—Unchanged. Prices steady. Offerings moderate and sales light. Wrought, £3. 2/6.

IRON.

American Pig.—The market is still quiet, although we hear of considerable inquiry. Sales are reported of 1000 tons No. 1 X Foundry at $25; 300 tons 2 X at $22; and 200 tons Gray Forge at $20—all Thomas Iron. We quote on a firm market: Foundry No. 1, $25; Foundry No. 2 X, $21 @ $22; Gray Forge, $20 @ $21.

Scotch Pig.—Owing to the quantity of ice in our rivers, and the snow blockade on our streets, rendering the transportation of heavy loads almost impossible, the business in Scotch Iron during the week has been unusually light. The only sale we hear of is 100 tons Glengarnock, from yard, at $22.50. We quote: Eglinton, $21.50; Carnbroe, $22; Coltness, $23.50 @ $24; Glengarnock and Gartsherrie, $22.50 @ $23.

Rails.—Sales are reported of 8000 tons Steel Rails at mill at $57.50, and 1000 tons English Steel Rails for shipment to this port at about $61. In Iron Rails no new business is reported. We quote Steel, at mill, $57.50 @ $62.50, and Iron Rails, $46 @ $49.

Old Rails—Sales are reported of 5000 tons D H at $28 @ $29.25, part here and to arrive, also 3000 tons Ts on the spot at $26.50 @ $27, and 800 tons Old Bridge Rails at $28. We quote $26.50 @ $28 for Ts and D. H. respectively.

Scrap.—Sales aggregating 1500 tons Wrought Scrap are reported at $27.50 @ $28 from yard. We quote prime selected No. 1 Wrought, $28 from yard.

We have received the following:

NOTICE.

In consequence of the continued imitation of our well-known brands of Galvanized Sheet Iron, Juniata and Charcoal Refined, so that the trade can no longer rely upon the qualities they represented, unless bought of us direct, we have decided to abandon these old brands, and in their stead have adopted the following, which we register as trademarks, to secure to ourselves and patrons, as well as the trade in general, the benefits of our established grades of Galvanized Sheet Iron.

Our first quality is made from Best Charcoal Hammered Blooms, of our own manfacture, and hereafter will be branded "Soho C. H. B., Moorhead & Co., S. M. I., Soho Mills, Pittsburgh."

Our second quality will be branded "Planet."

Our third quality will be branded "Refined."

In sending forth our stock under these new names, the trade can rely in receiving in our "C. H. B." a guaranteed strictly first-class Galvanized Sheet Iron in every respect, while, in our "Planet" brand, as second quality, and "Refined," as third quality, we know they compare favorably with any in the market.

In addition to our Galvanized Sheet Iron, we manufacture three grades of Black Sheet, viz.: Juniata, O. K. Charcoal, and Common, together with the heavier gauges of same in Fire Bed, Tank and Plate Iron. Specialty—Wide Sheets for Sap Pans. Yours, respectfully, MOORHEAD & CO.

PITTSBURGH, January 1, 1881.

We invite attention to the advertisement of Moorhead & Co., on page 11, in which *fac similes* of these trade-marks appear.

METALS.

Copper.—There have been no sales made beyond dealings in a jobbing way, but the latter demand being good and steady, the market has remained very firm at 19¼¢ @ 19½¢, Lake Superior, and 18½¢ @ 18¾¢, Baltimore. London quotes Chili Bars, £62, and Best Selected, £67.

IMPORT OF COPPER INTO THE UNITED STATES, JANUARY 1 TO NOVEMBER 1.

	1880.	1879.	1880.	1879.
Ore, cwts..	39,131	10,326	$177,229	$10,229
Ingots, lbs.	4,427,202	85,439	692,173	9,567
Manufrs....	.....	.....	317,832	247,305
Total...	.....	.....	$1,187,234	$267,101

DOMESTIC EXPORT.

Ore, cwts.	16,873	10,913	$59,434	$43,014
Ingots, lbs.	315,560	13,130,380	60,701	1,988,681
Manufrs...	.....	.....	49,419	72,009
Cartridges.	.....	.....	508,778	329,129
Total...	.....	.....	$678,392	$2,433,433

Our latest advices by mail from London are to the following effect, under date of December 25: "There has been a rather better market this week, and prices for Chili Bars have shown a somewhat improving tendency. The market opened on Monday at £60. 12/6 @ £60.17/6, and closed to-day steadily at £61. The amount of business, however, which has been transacted has been rather limited, but the improved tone indicates that the prospects are viewed as satisfactory; but it would appear that some great impression will have to be made upon stocks ere any renewed and continuous activity occurs in the speculative demand. The only feature in this market worthy of consideration is the moderate range of prices now ruling, and this is a point which should not be overlooked by buyers, as it tends to stimulate the demand to a material extent, so that the market is easily maintained." Manufactures remain as under: Bottoms, 31¢; Braziers, according to size, 28¢ @ 34¢; Circles, 31¢ @ 34¢; Segment Sheets, 31¢; Fire-box Sheets, 28¢; Sheathing, 26¢; and Bolt Copper, 28¢

Tin.—Since the artificial strain put upon this metal here when it had declined to 19¢, our market has resumed much firmness, and nothing can now be bought under 20¢, with a good prospect of further advance. About 200 tons have been sold during the week. The Singapore market remains unchanged at $28.25 per picul, or about 21¢ here. London has advanced with Straits to £93. In this market 400 to 500 tons of Straits besides the above have sold to go to London, and part of this has been actually shipped. The deliveries in England in December have been 1000 tons, and in Holland 500. Shipments from the Straits to England in all the month of December have been 700 tons, and to the United States 525 tons. The closing statistics of the year on this coast for 1880 are the ensuing ones:

		Tons.
1880—December 1.	Stock first hands	1,200
" "	" second "	1,830
Total		3,030
December arrivals		870
Total		3,900
Deduct consumption		900
Total		3,000
Dec. 31. Stock afloat from the Straits		1,900
" "	Australia	100—2,000
Visible supply, January 1, 1881		5,000

At the close the cable reports Straits Tin, £94, at London, notwithstanding the export movement from here, and this causes the market to close with great firmness at the following rates for large lots: Straits, 20¢ @ 20¼¢; Australian, 20¢ @ 20¼¢, and Billiton, which is scarce, 19⅞¢ @ 20¼¢. "London, Dec. 25.—This week the Tin market has been rather inanimate, and at the early part prices tended in buyers' favor; nevertheless the amount of business transacted was limited, the spirit of speculation which gave so much life to the market a week or two back having to a great extent subsided, and quietude instead of activity prevailed, but the market has since somewhat recovered. Cash parcels of foreign Tin changed hands on Monday at £90. 10/ @ £90, and closed to-day at £90. 15/ @ £91. It seems that holders have no intention of submitting to any further material concession, and notwithstanding that the demand is dull at the present time, yet, according to the last statistics, the market appears in such a sound and satisfactory position, and the future prospects seem so very promising that most holders prefer to risk the future course of prices than to sell at present rates." *Tin Plates.*—The market at New York has been very quiet, but firm. At Liverpool no further change has occurred. We quote, large lines, ordinary brands, per box, Charcoal Bright, $5.87½ @ $6.25; ditto Ternes, $5.37½ @ $5.75; Coke Tins, $5 00 @ $5.12½, and ditto Ternes nominally, $5.

Lead—Has continued quiescent, and, although some more inquiry manifests itself, the dealings have remained circumscribed. We quote Common Domestic, $4.30. Refined is very dull at 4½c. Manufactures are quoted as follows: Sheet Lead, 7¢; Lead Pipe, 6½¢; Tin-lined ditto, 15¢, and Block Tin Pipe, 40¢.

Spelter and Zinc.—The improved feeling in Europe continues, the advance in London thus far being £1 per ton, while here Domestic is firm at 5¢. *Sheet Zinc* is unaltered—7¢.

Antimony.—There is greater ease. We quote the same 14¾¢ @ 15¢, as to brand.

OLD METALS, PAPER STOCK, &c.

We have no change to note in the market for Old Metals. The purchasing prices offered by dealers are as follows:

Copper, heavy	℔ lb.	$0.16	@ $0.17
Copper Bottoms	"	.14	@ .14½
Yellow Metal	"	.09	@ .09½
Brass, heavy	"	.11	@ .12
Brass, light	"	.09	@ .09½
Composition, heavy	"	.13½	@ .14½
Lead, heavy	"	.03¾	@ .04
Tea Lead	"	.03½	@ .03¾
Zinc	"	.03¼	@ .03½
Pewter, No. 1	"	.12	@ .13
Pewter, No 2	"	.08	@ .09
Wrought Iron	℔ ton	21.00	@ 22.50
Light do	"	12.00	@ 13.00
Stove Plate	"	12.00	@ 13.00
Machinery do	"	15.00	@ 16.00
Grate Bars	"	7.00	@ 8.00

The prices current for Rags, &c., are as follows:

Canvas, Linen	℔ lb.	3½c.	@ 4 c.
White Cotton, New	"	3½c.	@ .....
" " No. 2	"	2½c.	@ .....
White, No. 1	"	4c ¼	@ 4½c.
" No. 2	"	2¾c.	@ 3 c.
Seconds	"	1½c.	@ 1¾c.
Soft Woolens	"	10c.	@ 11c.
Mixed Rags	"	2c.	@ 2½c.
Gunny Bagging	"	1¾c.	@ .....
Jute Butts	"	2¾c.	@ 3 c.
Kentucky Bagging	"	3c.	@ .....
Book Stock	"	2½c.	@ 2¾c.
Newspapers	"	1½c	@ 1¾c.
Waste Paper and Scraps	"	½c.	@ ¾c.
Kentucky Bale Rope	"	4c.	@ .....

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending January 4, 1880:

Hardware.

Boker H. & Co.
Chains, cks., 35
Cases, 69
Packages, 52
Klanburg C.
Whetstones, 26
McAndrew J. C.
Emery stones, tons, 366¼
Schoverling, Daly & Gales,
Mdse., pkgs., 1
Wiebusch & Hilger
Hdw. Co.
Cutlery and hdw., pkgs., 30
Order,
Bundles, 77
Bales, 6
Grindstones, 4
Emery, cs., 14

Iron.

Bank of Nevada,
Scrap rails, kilos., 212,113
Baring Bros.
Pig, tons, 1926
Brooks & Co.
Cases, 3
Brown Bros. & Co.
Wire rods, coils, 538
Drexel, Morgan & Co.
Blooms, 1120
Lundberg G.
Bars, 2491
Milliken & Smith,
Wire, bdls., 2034
Netherland Trading Society,
Scrap rails, kilos., 385,580
Stone T. & Co.
Mills, cs., 1
Order,
Pig, tons, 150
Scrap rails, tns., 1462
Scrap rails, pcs., 2849
Wire rods, bdls, 613
Wire, coils, 113

Steel.

Prosser Thos.
Bands, 335
Bars, 4
Tire forgings, 20
Woodford W. O.
Bundles, 232
Bars, 22
Cases, 19
Order,
Scrap spring, lot, 1

Metals.

Byrne Jos. & Co.
Tin plates, bxs., 3401
Drexel, Morgan & Co.
Tin plates, 3554
Leaycraft & Co.
Packages, 6
Lead, pigs, 18
Montell T. & Sons,
Scrap brass, bbls. 13
Scrap copper, bbls. 4
Phelps, Dodge & Co.
Tin plates, bxs., 5558
Black taggers, bxs., 200
Willitt & Hamlin,
Yellow metal, cs. 155
Order,
Tin plates, bxs., 14,212
Black taggers, bxs, 54

EXPORTS

Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the Week ending January 4, 1881:

	Quan.	Val.
Danish West Indies.		
Mach'y, pkgs.	4	$310
Hdw. cs.....	4	46
Glassw're, cs.	8	45
Pltdware., cse	1	60
Cart.....	1	34
Ptlm., gals....	1000	138
Dutch East Indies.		
Ptlm., gals.	300,000	37,000
Amsterdam.		
Ptlm.. gals.	398,224	38,826
Rotterdam.		
Ptlm., gals.	256,275	25,700
Hamburg.		
Hdw., cs.....	78	1,159
Lub. oil, bbls.	300	1,178
Belting, pkgs.	3	840
Mach'y, cs....	1	550
Ag. imp.,pkgs	6	421
Clocks, bxs...	102	1,564
Sew. ma., cs..	329	7.195
Bremen.		
Ptl., gals.	1,172,548	114.926
Carbon, bbls..	25	550
Ag. imp., pkgs	74	950
Guns, case....	1	35
Antwerp.		
Lub. oil, bbls.	50	400
Mf. iron, pkgs.	14	934
Lamps, pkgs.	6	344
Hdw. cs.....	25	540
Rifles, cse.....	1	238
Gibraltar.		
Chandeliers, cs	2	65
Canada.		
Antimony, cks	12	1,142
British North American Colonies.		
Coal, tons.....	414	1,676
Mf. iron, pgs.	21	175
Ptlm., gals..	227	34
British East Indies.		
Ptlm., gals.	455,000	60,287
British West Indies.		
Hdw., cs.....	55	1,136
Ptlm., gals....	8250	1,068
Clocks, bxs...	11	240
Nails, kegs...	100	400
Carriages.....	2	400
Glassw're, cs.	20	575
Coal, hhds....	10	60
Ag. imp., pgs.	6	37
French West Indies.		
Ptlm., gals....	5000	650
Cge. mtl., pkge	1	50
British Guiana.		
Glassw'e, cs..	49	475
Ptlm., gals...	4600	628
Pltdware, cs..	2	151
Hdw., cs.....	17	310
Tel. mtls., pkge	1	180
Clocks, bxs...	12	500
Havre.		
Machy., case.	1	150
Ag. imp., pkgs	122	2,954
Ptlm., gals.	175,802	12,280
Marseilles.		
Ptlm., gals	252,000	17,200
Cette.		
Ptlm., gals.	253,276	16,514
Lisbon.		
Ptlm., gals.	70,144	7,165
Corfu.		
Ptlm., gals.	80,000	9,600
Trieste.		
Ptlm., gals.	352,147	35,500
Alexandria.		
Ptlm., gals.	460,900	55,800
Constantinople.		
Ptlm., gals.	143,000	17,696
Africa.		
Ptlm., gals.	74,430	8,928
Argentine Republic.		
Glassw're, cs.	39	714
Ptlm., gals.	45,000	8,500
Mf. iron, pkgs	44	3,749
Tinware, cs...	5	80
Pltdware, pgs.	3	260
Hdw., cs.....	313	6,170
Lamp gds, pgs	122	3,202
Clocks, bxs...	49	2,044
Cutlery, cs....	7	96
Sew. ma., cs..	24	950
Nails, kegs....	75	550
Ag. imp., pkgs	34	927
Cisplatine Republic.		
Lmp g'ds, pg.	23	688
Sdpaper, cs....	6	190
Ag. imp., pkgs	417	6,972
Ptlm., gals.	30,000	3,887
Pltdware, cs..	8	500
Cutlery, bxs..	42	996
Arms & a, pgs	29	502
Coal, tons....	353	1,483
Hdw., cs.....	199	3,148
Carbines, cs..	5	1,112
Mach'y, cs....	9	710
Sew. ma., cs..	133	1,805
Glassw'e, cs..	14	322
Mf. iron, pkgs	104	3,076
Clocks, bxs...	39	1,245
Pumps, pkgs.	5	145
Venezuela.		
Carriage.....	1	301
Sew. ma., cs.	3	84
Hdw., cs.....	6	238
Ptlm., gals...	6548	816
Cutlery, case.	1	93
Tel. mtl., pgs.	45	1,233
Cuba.		
Coal, tons ...	405	1,539
Mach'y, pkgs.	902	33,258
Cutlery, cs...	2	187
Machinery, pkgs	143	$1,388
Glassw'e, cs..	59	1,879
Pumps, pkgs.	5	127
Scales, pkgs..	91	787
Cars.....	24	1,903
Mach. oil, cs..	27	126
Ptlm., gals.	182,753	19,314
Nails, kegs...	103	197
Ag. imp., pkgs	107	3,308
Hdw., cs.....	138	2,721
Grindstones..	183	225
Lamp gds.pgs	10	97
Lub. oil, bbls.	13	154
Clocks, bxs...	4	89
Brass gds., cse	1	208
Spikes, kegs..	8	45
Mexico.		
C'ge mtl..pgs.	4	100
Nails, kegs...	6	23
Tacks, bxs....	8	32
Lead pipe, coil	64	524
Tin, bxs.....	40	215
W. mills, pkgs	43	338
Ptlm., gals....	6000	805
Wheels, case.	1	39
Sandwich Islands.		
Pumps, pkgs.	1	400
Porto Rico.		
Mf. iron, pkgs	56	3,769
Ag. imp., pkgs	5	174
Petl., gals....	7825	1,134
Mach'y, pkgs.	58	5,556
Glassw'e, cs..	31	361
Hdw., cs.....	44	907
Wire, spools..	20	180
Clocks, pkgs..	5	122
Nails, kegs...	22	50
Carriages.....	2	670
Lamp gds, pgs	8	200
Tinware, cs...	18	166
China.		
Cartridges, cs.	5000	12,000
Hdw., cs.....	11	1,001
Mach. oil, case.	1	10
Coal, tons ...	150	645
Mf. iron, pkgs.	57	1,472
Lamp gds., cs	36	2,161
Ptlm., gals	236,540	29,585
Nails, kegs....	6	24
Brazil.		
Cutlery, cs....	40	1,269
Sdpaper, bales	2	50
Nails, kegs...	150	421
Locomotives..	3	21,150
Pumps, pkgs.	9	370
Irons, cs.....	7	43
Lamp gds., pgs	16	425
Ptg. matl., pgs.	10	353
Ptlm., gals..	65,650	8,545
Glassw'e, cs..	81	635
Clocks, bxs..	24	584
Machy., cs...	27	1,211
Hdw., cs.....	301	4,315
Mf. iron, pkgs.	24	370
Sew. ma., cs..	28	528
Shoe nails, cs.	7	46
Pltdware, cs..	2	89
Tinware, cs..	10	180
Trucks.....	6	28
Cge. mtl., pgs	3	115
United States of Colombia.		
Ptlm., gals....	1230	183
Glassw'e, cs...	19	207
Sew. ma., cs..	23	877
Pltdware, cs..	2	237
Carriages	2	447
Mach'y pkgs..	255	9,098
Powder, lbs..	3086	652
Wire, spools..	47	362
Ag. imp., pkgs	19	489
W. wheel.....	1	3,350
Clocks, cs.....	2	88
Nails, kegs...	21	69
Pistols, cs....	4	315
Wire, bbls....	7	3,150
Hdw., pkgs...	123	2,317
Mf. iron, pkgs	32	309
Cutlery, cs....	11	854
Lamp gds, pgs	13	302
Saddlery, cs..	13	1,211
Ptg. matl., pgs	31	1,102
Horseshо., kgs	30	141
Tinware, cs...	12	93
W. cloth, cse.	1	43
Hose, bales...	2	118
Iron, bdls....	59	111
Pumps, pkge.	1	13
Guns, cs.....	2	45
Liverpool.		
Ag. imp., pgs.	8	250
Tel. mtl., pgs.	2	470
Electroty., cse	1	55
Clocks, pkgs..	221	3,573
Carbon, bbls.	50	625
Guns, case...	1	25
Pumps, pkgs..	20	875
Phot. matl., cse	1	100
Mf. iron, pgs..	34	975
Watch mtl., bx	1	1,000
Pltdware, cs..	2	144
Lmp. gds, pgs	5	64
Thermetrs., cs	1	74
Iron safe	1	225
Hdw., pkgs..	98	4,072
Machy., pgs..	52	10,525
Hose, bales...	2	254
Lub. oil, gals.	2550	990
Rifles, cs.....	150	34,200
Sew. ma., cs..	14	430
Belting, case.	1	415
Ptlm., gals.	478,043	50,792
London.		
Clocks, pkgs..	172	5,066
Ptlm., gals.	553,300	79,300
Mach'y, pkgs.	113	4,043
Hdw, pkgs...	164	4,207
Pumps, pkgs.	2	89
Ptg. matl., pgs	2	35
Abest. mtl., pg	54	592
Ag. imp., pkgs	26	520
Sew. ma., cs..	65	1,938
Pltdware, cs..	4	315
Mf. iron, pkgs	9	219
Guns, cs.....	4	1,650
Glasgow.		
Mf. iron, pkgs	8	975
Mf. brass, cks	17	660
Belting, cs...	4	1,581
Clocks, bxs..	30	347
Hdw., pkgs...	2	70
Cartridges, cs	5	59

COAL.

Trade during the past week has been very quiet from a variety of causes. Consumption has been brisk, especially in the domestic sizes, owing to the extreme cold weather. So far as we can learn very little inquiry has been made for Coal, and the small supply of Coal coming down has been ample to fill the current demand. At the present time of writing the ice in the harbor has seriously interfered with the movement of Coal. Some of the shipping points are blockaded by ice and others are obstructed to a greater or less degree. The demand for Lehigh Chestnut is very good, and we hear $3.90 quoted for it, with the provision that none would be sold unless some other size was taken at the same time. Lehigh Stove is quoted at $4.30, while the free-burning Coals are considerably off. The line trade of most of the companies is reported as unusually brisk. This trade is taking a very large quantity of Coal. The cold weather has caused trouble in freights, and Boston is quoted at "anywhere from $1.50 to $2." Providence is reported as frozen up, and a barge office quotes the rate at $1.25. To New Haven the rate is from 80¢ to 85¢, while harbor freights have advanced to 25¢ and even more.

PHILADELPHIA.

REVIEW OF THE IRON TRADE OF 1880.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Jan. 4, 1881.

During the past four years it has been our rule to present to readers of *The Iron Age* a detailed review of the manufacturing interests of Philadelphia. The condition of business during the past year, however, has been so exceptional that we deem it best not to make any attempt at a detailed statement. In the first place, every branch of business during the year has had a season of almost unprecedented prosperity, while the outlook in all departments is equally promising. In such a condition of affairs a review would be monotonous reading, and an accurate one, fortunately, at this time presents no material for variety. There is still another reason, and probably the strongest of all, for the omission. Heads of firms are too much occupied to grant lengthened interviews, besides which, in times like these, there is an indifference in regard to details which is not the case in dull times, when all are anxious for indications of improvement. In a general way it may be said that the increase in business for the year may be placed at from 20% to 35%. In every branch of business there has been a constant demand for goods, at times far beyond the capacity to supply. Manufacturers of machinery, tools, locomotives, cars, car wheels, engines, boilers, stoves, files, saws, locks and implements, have had a steady rush of orders, constantly pushed for deliveries, and to-day there are probably more orders on the books than at any previous time. More hands are employed than ever before; good wages are paid, and good workmen are scarce. Many large and costly additions have been made to many establishments during the past year, and others are contemplated early in the year upon which we have entered. Probably the largest and most important addition during 1880 was that of the Enterprise Mfg. Co., the next being the new building for the American Machine Co. A magnificent and costly building at the corner of Spring Garden and Broad street is about finished, and will be occupied for the offices of Burnham, Parry Williams & Co., proprietors of the Baldwin Locomotive Works. This firm turned out 519, and entered orders for upward of 850 locomotives during 1880. Their capacity, large as it is, giving constant employment to upward of 2800 men, is taxed to the utmost to meet the demand. Very costly improvements have also been made by Henry Disston & Sons at their Tacony establishment, but we have not been able to obtain particulars. The following have made additions and improvements of considerable importance during the year.

G. & H. Barnett, Files, New offices and extension on shops.

J. Barton Smith, Files, Warehouse and factory entirely new.

Christian Hennsler, Thrift File Works, extension to shops.

Philadelphia Screw Company, an entirely new building.

Philadelphia Smelting Company, Limited, large addition.

Merchant & Co., Tin Plates, Very extensive and costly improvement.

N. & G. Taylor Co, Tin Plates, Large four-story new building, adjoining and additional to their old stand.

Chester Steel Castings Company, an addition which more than doubles their former capacity.

Eureka Cast Steel Company have also doubled their capacity.

Robert Wetherill & Co., Chester, Pa., a very large addition to their former extensive establishment.

Stanley G. Flagg & Co., an entirely new and extensive foundry, offices, &c.

Dienelt, Eisenhardt & Co., Power Hammers, An entirely new and extensive establishment, one of the most complete and convenient to be found anywhere.

Campbell & Rickards, a fine new establishment for steam engine building.

Schleicher, Schumm & Co., large addition, which doubles their capacity for building the "Otto Silent Gas Engine."

Hoopes & Townsend have made important improvements and additions to their extensive bolt and rivet works. They have increased their warehouse and factory room considerably, besides introducing a large amount of new and improved machinery, by which they can turn out about one-third more goods than they did a year ago.

Hillebrand & Wolf, the old-established lock manufactory firm, have extended their workshops considerably, and are now doing about a third more than they have ever done before.

The Trenton Iron Company have opened an office and warehouse in Philadelphia, at 21 South Fourth street, which is under the charge of Mr. John Hewitt.

The old firm of Heaton & Denckla has been dissolved by limitation, Mr. Heaton retiring from the firm which he established 40 years ago. Messrs. C. Paul and C. Reuben Denckla will continue the business under the firm name of Heaton & Denckla Hardware Co.

Mr. William Disston has been admitted as partner in the firm of Henry Disston & Sons.

The Midvale Steel Company have purchased the works lately operated by the Midvale Steel Works, at Nicetown, Philadelphia, and notify the public that they will carry on the same business as their predecessors, and that the officers of the former company are the officers of the present one, and the superintendents of the business will be the same.

Pig Iron.

The year just closed has been of deep interest to the Iron trade, and, on the whole, probably the most prosperous one since 1872 and 1873. Prices fluctuated violently, opening in January at $37 for No. 1, advancing to $42 in February, steadily declining until July, when sales were made at $22.50. From that date to the present prices have been very steady, advancing from the lowest point about $2 during July and $1.50 during August, when quotations stood at $26 for No. 1. During September the market showed symptoms of a reaction, until prices were quoted about $1 lower. During October the excitement of the Presidential election had a depressing influence, and sales were made, in a few instances, at $24, and still lower for large lots. A stronger feeling was developed during November, and up to date there has been a steady demand at $25, which may now be regarded as a minimum quotation for standard brands of No. 1 Foundry. Mill Irons have been subject to similar fluctuations, but the difference between the price of Forge and Foundry Irons is much greater than formerly. The encroachments of foreign material—Old Rails, Scrap and low-grade Pig Metal—has, no doubt, interfered with the consumption of American Gray Forge, but the continued discrepancy—varying from $3 to $5 ℔ ton—seems to be more than can be clearly understood, especially so in view of the fact that the higher grades have to meet competition with Scotch Iron. The consumption of Pig Iron during 1880 is estimated by Mr. James M. Swank at about 4,000,000 gross tons, against 3,000,000 tons in 1879—an increase of about 33⅓ %. The increase in production is estimated at about 550,000 gross tons, viz.: 3,300,000 tons in 1880, against 2,741,853 tons in 1879. The imports of foreign Pig during the year amount, in round numbers, to 700,000 tons, of which nearly 500,000 tons arrived during the first six months, so that it may be supposed that from that source the heaviest pressure is over. The question of prices during the coming year is one of the deepest interest, and in regard to which predictions would probably be utterly futile. Still, there are general features which, if carefully considered, may throw some light on the course of the market in the immediate future. In the first place, it may be taken for granted that the consumption of Pig Metal during the first half of the year will be the heaviest in the history of the trade. In the next place, unless prices advance here or decline in Great Britain, there is very little danger of serious competition from abroad. The most important question, however, is in regard to the ability of domestic producers to furnish the quantity required without advancing prices. Based on consumption during the past six months, it is not too much to assume that legitimate requirements during the first half of 1881 will reach 2,250,000 gross tons. Stocks of foreign Pig are probably not in excess of 150,000 tons, all told, and, to meet the deficiency, production must be increased or imports continued. The question of ores, fuel, and freights are important factors, and it is doubtful if consumption of these can be increased without a corresponding advance in cost. At this point, consideration must be given to the condition of the English market. The connection is so intimate, and price so near together, that no opinion can be formed of either market unless in connection with the other. Turning, then, to the English market, the London correspondent of *The Iron Age*, under date of December 13, says that the production in Scotland as well as in Cleveland is still far too heavy, but there is so much public money forthcoming for warrants and production is so cheap that the smelters are apparently convinced that they cannot do better than proceed. "Whether the production will be lessened, or otherwise, I cannot say, but it appears pretty certain that if it is continued, it may be some time before we again encounter high prices. The prospects of trade, nevertheless, are regarded as being hopeful and good, hence the other contingency is not impossible, and by some persons is regarded as being among the probabilities of the early part of next year." Taking the condition of both markets into consideration, it is not unlikely that prices may stiffen a little—in fact, a dollar or two of an advance would be satisfactory to consumers as well as producers. An advance in either market would probably meet with an immediate response in the other; the real danger will be in carrying things too far. There is no need to fear an iron famine, and, so long as prices are upward of $25 per ton, the supply from one source or the other will be amply sufficient for all legitimate requirements. At the same time, if the desire to buy takes possession of people, as it did a year ago, precisely the same results may be expected to follow; an advance far beyond what was anticipated, and a decline just as sudden and just as disastrous. In the meantime, prices are very steady, buyers appear to be fairly supplied with stock, and producers, after delivering on contracts, have no difficulty in disposing of their surplus. The average prices for No. 1 Foundry Iron during 1880, were as follows:

January.....	$39-37½	July	$24.25
February.....	41.25	August.....	26.75
March.....	38.75	September.....	26.30
April.....	33.40	October.....	25.37½
May.....	26.25	November.....	25.50
June.....	24.00	December.....	25.25

The intimate connection between this and the market in Great Britain is shown by the following quotations of Scotch and English Irons during 1880. Prices there, it will be seen, were at the highest and lowest points about a month in advance of the American market, from which it would seem that the controlling influence is on the other side of the water.

PRICES OF SCOTCH PIG IRON.

	1880.			1879.		
	Price of Scotch pig per ton.	Tons in stores only.	Scotch fur. in blast.	Price of Scotch pig per ton.	Tons in stores only.	Scotch fur. in blast.
	s. d.			s. d.		
January 3.....	71 0	425,072	101	43 1½	204,746	91
February 6....	67 3	438,348	111	42 5¾	207,972	87
March 5.....	60 10	443,883	113	43 9	221,433	89
April 2.....	55 0	438,029	114	42 7	237,177	90
May 7.....	46 9	439,181	115	42 3	256,537	86
June 4.....	43 3	444,239	116	41 7	268,519	89
July 2.....	49 2	448,494	116	40 9	277,802	90
August 6.....	55 4	455,342	117	41 3	290,023	90
September 3..	53 4	467,899	32	45 3	300,735	90
October 1.....	50 1	473,619	95	58 6	318,350	69
November 5....	51 2	477,667	119	54 4	364,591	95
November 26..	52 4¾	481,543	120	58 4½	389,617	99
December 15..	51 10	489,460	121	58 4	403,012	10

CLEVELAND PIG IRON, 1880.

Date 1880.	Prices. No. 1.	Prices. No. 3.	Furnaces blowing.	Stock.
January 1	58/6	53/6	96	282,886
10	62/6	57/6	97	...
17	68/0	63/0	....	.....
February 1	67/6	62/6	....	.....
20	70/0	63/0	....	.....
March 1	70/0	62/6	....	.....
12	67/6	58/0	....	.....
April 2	60/0	52/6	....	.....
9	60/0	56/0	110	.....
23	45/6	39/0	....	.....
May 8	45/0	39/0	111	243,905
15	42/6	37/6	....	.....
June 5	41/0	36/0	....	.....
19	43/0	38/0	....	.....
July 2	43/6	38/6	...	.....
10	46/0	41/0	110	253,743
August 3	49/0	44/0	...	.....
10	50/0	45/0	112	.....
September 10	47/0	42/0	....	.....
28	43 6	38/6	....	.....
October 2	33/0	40/0	....	.....
16	44/6	39/6	118	298,928
November 1	44/6	39/6	118	312,125
December 1	45/0	40/0	....	.....
13	44/0	39/0	....	.....

Furnaces in blast and stocks in store in January and November, 1880, were as follows:

	Furnaces.	Stocks.
JANUARY, 1880.		
Scotch	101	425,072
Cleveland	96	282,886
Total	197	707,958
NOVEMBER, 1880.		
Scotch	119	477,067
Cleveland	118	312,125
Total	237	789,192

An increase of 40 furnaces in blast, and of stocks in store, 81,234. This shows a considerable increase in production, even under a somewhat dull market, and if compared with 1879 would be still more remarkable. The condition of furnaces in this country shows a steady increase in production, so that, large as consumption is, the supply will no doubt be fully adequate to all requirements. Prices to-day may be quoted: $25 for No. 1 Foundry, $21.50 for No. 2 ditto, and $20 @ $21 for Gray Forge Iron; English Iron, $20 @ $21 for No. 1 and $18 @ $19 for No. 3, in small lots.

Manufactured Iron.

The fluctuations in Finished Iron have been very similar to those in the raw material. The demand has been large, and the production the largest in the whole history of the trade. The mills very generally have been run on full time, and some that had long been closed were put in active operation. The large arrivals of foreign Bars, however, began to have a depressing influence, and for several weeks the market staggered under the weight of stuff offered. Steady consumption gradually brought relief, and the last six months have been a period of moderate activity, but at barely remunerative prices. The outlook is good; consumption promises to be larger than ever, and, as the market is pretty well relieved from the incubus of foreign stock, better prices are looked for. Refined Bars opened in January at 3.4¢, advanced to 3.6¢ before the 15th and 3.8¢ before the close of the month. This price, with occasional sales at 4¢, was maintained to the middle of March, when the market began to weaken very rapidly. At the beginning of April prices were very unsettled and quoted 3.5¢ @ 3.6¢; on the 15th of April, 3.2¢ @ 3.3¢; and on the 29th there were free sellers at 3¢. The decline was continued during May, each week showing quotations a tenth less than in the week preceding. Prices during June were somewhat steadier, opening at 2.4¢ @ 2.5¢, closing at 2.2¢ @ 2.3¢, which proved to be the lowest point of the whole year. At this time a strike was made by puddlers and other employees in the Bar mills, and for six weeks there was a suspension of work. This, probably, was of great advantage to the trade at large, reducing stocks very materially, and resulting also in the adoption of a scale of wages which appears to give general satisfaction. The mills commenced work in August, adopting 2.4¢ as the card rate, which was continued to the close of the year, and is still in force. During a portion of the time, however, sales were made as low as 2.3¢, and, in a few instances, 2.25¢ was accepted for very desirable orders. During the last month of the year prices toned up considerably, and the card rate is no doubt the actual selling rate, without any concessions whatever. The year opens with excellent prospects, a fair amount of orders already entered, numerous inquiries from good buyers and prices very firm. Structural Iron has been in constant demand at satisfactory prices, and the mills have been full of work throughout the whole year. Prices have been subject to changes similar to those in Bar Iron, but for several months the market has been steady, with scarcely any variation in quotations. The demand has been well distributed, bridge, ship and car builders having been constant buyers, while others have placed many large orders for architectural purposes. Iron of this class has been sent abroad in considerable quantities by such firms as the Phœnix Iron Company, the Edgemoor Iron Company and one or or two others. Canada, Brazil, Demarara, Cuba, Nicaragua and Mexico have been the most prominent buyers, and these countries are now looked upon as permanent customers, especially for architectural and bridge Iron. The elevated roads furnished a great deal of work in the early part of the year, and, although there is not much in that line doing now, it is not unlikely that the demand will soon be renewed. In the meantime manufacturers have been fully employed on orders from other quarters, and prospects are universally bright. The demand from the shipyards must be very large. Cramp's have 1000 men at work, and are increasing the number as rapidly as good men can be obtained. Roach & Son have recently taken orders amounting to nearly $3,000,000, and other prominent firms are also very full of work. The extension of the railway system of the country will call for a large amount of bridge work, and from numerous other sources business is steadily pouring in. The plate mills have been fully employed throughout the whole year, and have probably made the largest output ever known. Tank Iron has been specially active, the demand at times being far beyond what could be supplied. Prices have been subject to several violent changes. Opening in January at 4¢ for Tank Iron, advancing to 4.3¢ before the close of the month, in February 4 5¢ was reached, and maintained until the middle of March, when a decline set in, which was continuous until the first week in June. The changes were from 4¢ April 1st to 3¼¢ April 18th, and 3.3¢ April 29th, May 6th 3.1¢, May 13th 3¢, May 27th 2.7¢. During June and July prices were steady at 2.6¢ @ 2.7¢. In August and September, under a very active demand, prices were advanced to 3¢, and in some cases 3.2¢ was paid for prompt deliveries. The market weakened during October, and in that month and November sales were made at all sorts of prices from 2.6¢ @ 2.8¢. During the last month of the year, the market stiffened again, closing with 2.8¢ as an inside rate and 2.9¢ generally asked. The lowest price mentioned for ship plate during the year was in October, several hundred tons having been taken at 6.25¢. The orders recently placed were at 2.8¢ @ 2.9¢, the market closing strong at the outside rate. The demand for Boiler Iron has been very good all through the year, and manufacturers are still entering a large amount of business at 4½¢ @ 5¢ for Flange Iron.

Sheet Iron.

The demand has been beyond precedent. The mills have been run to their fullest capacity, and stocks at the close of the year are not more than an average, with prospects of a heavy demand early in the season. Prices have varied in about the same proportion as other descriptions of finished Iron, the market closing steady at 4¢ @ 4½¢ for Nos. 16 to 28.

Rails.

The demand throughout the whole year has been very urgent, and orders for many thousand tons have of necessity been sent abroad. The total importations of Rails, including Iron, since the boom set in, is about 250,000 tons. The output of Steel Rails in the United States is estimated by Mr. Swank at 775,000 gross tons. A large addition is being made to the productive capacity; eight converters are in process of erection in Pennsylvania and two in Illinois, which will increase the output of Ingots and Blooms about 500,000 tons. It must be remembered, however, that Bessemer Steel is being used for many purposes other than for Rails. Plates are being rolled from it very extensively, and it is coming into use for other purposes, causing a large demand for Ingots and Blooms. It is anticipated that upward of 900,000 gross tons of Rails can be turned out if necessary, and from present appearances the demand is likely to be equal to the fullest capacity. Prices opened in January at $72.50, advanced to $80 before the close of the month, and during February were held at $85, with several sales at $82.50 @ $85. During March prices gradually declined, and sales could not be made unless at concessions from asking rates. This was still more marked during April, and at the close a reduction of $10 @ $15 ₱ ton from the highest point had to be conceded. The decline continued during the first half of May, until $60 was reached, since which time the market has been very steady and changes so slight as to call for no special remark. During September and October orders for nearly half a million tons were taken at prices varying from $57 to $60; but it is usual to make concessions for winter work, so that the decline was a nominal one and was no indication of weakness. One or two transactions were said to have been made at $55 @ $56, but they were quite exceptional. Sales of foreign Rails have been made from time to time, recently several lots for the South and Southwest. Prices seem to be strengthening, and toward spring will, in all probability, be higher; but our manufacturers will meet the price of foreign Rails, whatever that may be. Some of the Iron Rail mills are taking orders for Steel Rails to be rolled from foreign Blooms. A sale of this character was made last week—30-lb Rails at $63, from mill—in Pittsburgh. From the fact that upward of 25,000 tons of foreign Blooms have been sold in this market recently, it may be inferred that a larger business will be done this year than has been done before. There are some peculiar risks, however. The duty of 45 % charged is based not on actual cost, but on value at the time the duties are paid, which, in the event of a rapid advance, is a serious item. Manufacturers find it more convenient to have the purchaser of Rails furnish the Blooms from which they are to be rolled, but under present conditions it is scarcely probable that the business will assume very large proportions. Iron Rails have been in constant demand, opening in January at $60, advancing to $67.50 before the close of the month, and continued steady at about that figure until the first week in April. During April there was a steady decline, each week showing prices from $2 to $2.50 ₱ ton lower than during the preceding week. May opened with $55 asked, declined to $50 before the close of the second week and to $48 before the closing of the month. During June prices settled down to $45 as a minimum, since which time the market has been fairly active and very steady, with only slight variations in prices, and these usually in the way of improvement. Prospects are favorable for a heavy demand, but our manufacturers are at a serious disadvantage, raw material having advanced without any equivalent for the product. Prices to-day are nominally $46 and $47, but it is difficult to sell at the one figure and buy at the other. Foreign Rails can be delivered at $44 at tide, and, except in special locations, our manufacturers are not in a position to meet competition, especially as Old Rails are scarce, and, from present appearances, likely to be higher. However, there is every prospect that the demand will be active, and it is to be hoped that prices will improve. There are a few inquiries in the market already, and a sale of 800 tons English Rails (56s) has just been closed at $46, in store here.

Old Rails.

In the early part of the year the market was greatly excited, and prices were subject to frequent change. The highest rates were realized during January, when sales were made at $44. The opening sales were at $37, the third week $41, and before the close of the month $44 was paid for large lots. The market was steady during February, but toward the close signs of weakness were apparent, and there were free sellers at $42 @ $43. This feeling continued during March, each week showing a decline of 75¢ @ $1 per ton. April opened with quotations at $38, and for five successive weeks prices were marked down $1 per ton. Prices in the early part of May were very weak and the market unsettled. Toward the middle of the month sales were made at $25, and afterward down to $22.50, which proved to be the bottom price for the whole year. June showed a better demand and prices reacted to $26, afterward declining to $23 again, which was the opening quotation in July. Prices gradually stiffened, until $27 became the selling price, which was maintained throughout August and the first half of September. During the latter portion of September the market softened to $26, and for the balance of the year prices have not varied more than 50¢ per ton; occasionally lots were picked up at less money, but more frequently sellers had the advantage. The market this week opens firm, with sales at $27 for good-sized lots. Stocks in the four leading ports are estimated at about 150,000 tons, say 90,000 tons in New York, 40,000 tons in Philadelphia, and the balance divided between Boston and Baltimore. These are in strong hands, and as there is an active inquiry from consumers, higher prices are predicted. The English market is very strong and relatively higher than our own, so that some advance may be obtained, but at current rates for the products it is hard to see how consumers can meet an advance. The imports of old Iron since August, 1879, amounts to over 350,000 tons.

PITTSBURGH.

Office of *The Iron Age*, 77 Fourth Avenue, PITTSBURGH, PA., Jan. 4, 1881.

Pig Iron.—The market the past week has been quiet, as was to be expected, in view of the fact that a large number of consumers, as is the custom at the opening of a new year, are engaged in taking stock and making repairs, but there are still more buyers than sellers for future delivery at current rates. The most of those producers who were disposed to contract for forward deliveries have made about all the contracts they care to make for the present, the effect of which has been to give the market a firmer tone. We continue to quote Forge Irons at $20.50 @ $21.50, 4 mos., for cold-Short; $22 @ $22.50 for Neutral; $23 @ $24 for Red-short, cinder mixture, and $26 @ $27 for all-Ore do. Sales of Eastern Cold Blast Charcoal at $38; Coal and Coke Smelted Foundry Irons, $23.50 @ $25 for Nos. 2 and 1.

Bessemer Iron.—There is an increasing demand, both for immediate and future delivery, the latter especially, and prices are strong and advancing. Several sales have been made recently, but nearly all, for some reason or other, on private terms. Standard brands may be quoted at $27.50 @ $28. The activity in Bessemer is, as might be expected, affecting other grades of Iron by keeping down production, as furnaces now working on it would otherwise be making Mill and Foundry Irons.

Manufactured Iron.—Business is comparatively quiet, as it usually is the first week or two of the new year, but the outlook for an active spring trade never was better. Moreover, as the indications are that the mills will have all they can do, there is good reason to believe that they will be able very soon to command remunerative prices. We now quote Bars at 2.25¢ rates, 60 days, 2 % off for cash, although it is probable that a desirable order can still be placed at 2.10¢ @ 2.15¢. Sheet Iron is still quoted on a basis of 3 75¢ for No. 4; Skelp, 2.25¢ @ 2.35¢; Plate and Tank, 2.90¢ @ 3¢; Hoop, 3¢ @ 3.20¢.

Nails.—While business continues quiet prices are firm. So far as we can learn, manufacturers are standing as firm as a rock by the rate recently fixed by the Western Nail Association, $2.85, 60 days, with an abatement of 10¢ on car-load lots, and 2 % off for cash. Repeated efforts have been made to place large orders at the rates ruling prior to the recent advance, but without success. Manufacturers are confident of a large spring trade.

Wrought Iron.—The demand continues light, as compared with what it was a month ago, but the mills generally are still busy working up unfinished orders. No change in prices, 65 % @ 67½ % discount. Boiler Tubes, 40 % off. Oil Well Casing and Tubing, 21¢ and 70¢ per foot, net.

Railway Supplies.—An attempt was made here recently to place an order for Steel Rails for June delivery, and the best figure that could be obtained was $60, cash, at mill, and the seller by no means anxious for the order. Railway Spikes are firm at the advance noted in last report, 2¾¢, 30 days; Splice Bars, 2¼¢; Track Bolts, 3¼¢ @ 3½¢, with square and hexagon nuts.

Muck Bars.—There is some inquiry, and we quote at $38 @ $38.50 for Neutral, and $39.50 @ $40 for Red-short.

Steel.—For Merchant Steel business is quiet at present, but few fresh orders coming forward, but the outlook is promising for an active spring trade. No change in prices. Best brands of Refined Cast Steel, 11¢ @ 12¢; Machinery ditto, 7¢ @ 7½¢.

Scrap.—The market for all kinds of Scrap continues quiet, but dealers are expecting an increased demand within the next few weeks. No. 1 Wrought is still quoted $26 @ $28 ₱ net ton, and Old Car Wheels at $33 @ $35 gross.

Coke.—The demand keeps up well, and the volume of business would be larger than it is but for the scarcity of cars. Prices steady—$1.50 ₱ ton, free on cars at ovens, and $1.65 @ $1.75 for small foundry orders.

Window Glass.—Business continues quiet, but manufacturers are all busy piling up stock for the spring and summer trade. No change in discounts; car-load lots, 00 and 20 % on single and 70 % on double strength.

CHATTANOOGA.

Office of *The Iron Age*, Market and 8th Sts., CHATTANOOGA, Jan. 3, 1881.

The Southern district has done more and better business in the month just ended than was ever transacted in any December. There will be a marked improvement in all lines during this month. The weather has been intensely cold, the mercury reaching zero at many points South of Atlanta.

Pig Iron.—There is nothing special to report in the Pig Metal market. No. 1 Foundry is still in very light supply and prices for this grade are very stiff. We quote: No. 1 Foundry, $25 @ $27; No. 2 Foundry, $23 @ $25; Gray Forge, $20 @ $22; White and Mottled, $18 @ $20; Car Wheel Metal, $38 @ $40.

Miscellaneous Articles.—The cold and snow throughout the South have embargoed track renewing and reduced the supply of Old Rails materially. They have a steady and strong market. We quote: Old Rails at $26 @ $28; Wrought Scrap, $20 @ $24; Cast, $15 @ $17; Old Wheels, $28 @ $30.

Ores.—We quote: 50 % Brown Hematite, per ton, $2 @ $2.75; Red Fossil, $2 @ $2.25.

Nails—Are fairly steady at 3 25¢ rates, usual discount on 200-keg lots and for cash.

Manufactured Iron.—The list is quiet, and without quotable change. We quote: Bar at $2.35 rates; Railroad Spikes, $3; Track Bolts, $4; Trestle Bolts, $4.50; Fish Plate, $2.50.

Coal.—The supply of Coal for household consumption continues fairly sufficient to meet the increased demand. Prices continue exorbitantly high at all points South, and from 6 to 10 cents higher in Chattanooga than for several years past. We quote the local market at 22¢ @ 25¢ per bushel, delivered.

Coke.—Furnace Coke, $3 per ton at furnace; Foundry, 10¢ @ 12¢ per bushel.

Steel and Iron Rails.—We quote Steel Bars at $62.50 for American makes, $60 for foreign. Iron, $48 @ $50; Small T is firm at $55.

Lead.—We quote: Pig Lead, 4½¢ @ 5¢.

Steel.—Plow Slabs, 3 in. and under, $4.70; Black Diamond, ordinary sizes, 13¢.

CLEVELAND.

JANUARY 3.—*Pig Iron.*—There continues to be a steady demand for Pig metal, notwithstanding the opening of a new year and the usual withholding of orders incident to the season. The mills are buying freely, and foundries, while not anticipating their wants, are buying to cover necessities, which seem to be large. Iron manufacturing of every kind is being pushed to its utmost, but prices are not advancing as a rule. Charcoal Iron of car-wheel quality is active and tending higher, with every prospect of better prices being realized during the winter. Of other Irons, both Charcoal and Stonecoal, there seems to be a supply fully equal to the enormous demand. Charcoal Pig is selling at $33 @ $36, according to grade; Foundry at $23 @ $25.50; Mill and Forge at $20 @ $23. *Iron Ore.*—There is gradual lessening of the stocks in hand, and a disposition to hold firm on such small balances of No. 1 Ores as are left in hands of dealers—especially is this the case in Bessemer and Fix Ores. There is no doubt but that the latter will become very scarce as the winter progresses, as there is but little in the market. As we stated in our last article, consumers are looking around for the coming year, but with the exception of the steel works and Steel Ores it is a little early to name prices and close sales, but no doubt sales of all kinds will be consummated within the next 30 days to a greater or less degree. It is a known fact that there will be at least 1,200,000 tons of Lake Ores consumed this year in the steel trade. Of this Chicago alone will take about 600,000 tons. The shipments from the Lake Superior district last year were, in round numbers, 2,000,000 tons, and unless the output is greatly increased there will be a good demand for all the No. 1 Ores that will be produced in 1881, as it is generally conceded that the consumption of this year will be enormous We give you the following quotations in Ores for present market and delivery:

BESSEMER.	
Bessemer Speculars and Magnetics	$9.00 @ $10.00
Bessemer Hematites	7.00 @ 9.00
Menominee Range Ores	7.50 @ 9.00
MILL ORES.	
Speculars and Magnetics	8.00 @ 10.00
Hematites	6.50 @ 8.00
Fix Ores	9.00 @ 10.00

BOSTON.

JANUARY 1.—The market has been as quiet as is usually the case during the closing days of the expiring year, but there are many evidences that buyers will soon come into the market in sufficient numbers to render values even firmer than they are at present. In the West some mills have been apprehensive of higher prices, and have already contracted for Iron enough to supply their works for the next three or four months. We quote *American Pig Iron* at $25 @ $26 for No. 1 X; $21 @ $22.50 for No. 2 X, and $20 @ $22 for Gray Forge. These prices are f. o. b. at the port of shipment. Small spot lots will command $2 ₱ ton higher. *Foreign Iron* is without change in prices, but the surplus of the various brands of Scotch and English Pig Iron at this port is not as excessive as it was. There has been scarcely any Coltness Iron offered here for three or four months, but a very steady business has been done in Langloan, and this brand is meeting with a good deal of favor among foundrymen for machinery as well as for stove purposes. It is pronounced the strongest of Scotch Irons, but is at the same time softer and more fluid than American. We quote Langloan Iron at $24.50; Gartsherrie and Glengarnock at $23 @ $23.50; Eglinton at $21.50 @ $22; and Clarence (Middlesborough) at $20 for No. 1. There are also quantities of a variety of other brands of Iron, such as Heath, Calder, &c., on the market. Holders of Heath Iron have offered to sell it at $18.50 ₱ ton. *Old Rails* have met with considerable inquiry both here and at other markets, and the wants of buyers are evidently compelling them to accede to the advanced views of holders. As high as $31 has been paid here for American Rails since our last, and that figure is reported to have been refused in one instance for a 350 ton lot. We quote American Rails at $31 @ $32; and foreign at $28.50 @ $29 for D. H.'s, and $26.50 @ $27 for Tees. *Manufactured Iron* is quiet but steady, and there are many operators who are anticipating a slightly higher range of prices after the turn of the year. We quote Refined Bars at $2.25. Norway and Swedish are unchanged at $4.15 for Bars and $5.15 for Shapes. Nails are quiet and steady at $2.90, net, for 10d. to 60d. We quote Plates at $2.90 @ $3 for Common and Tank; $3.25 @ $3.37½ for C. No. 1; $3.50 for C. H. No. 1 Shell; and $4.75 for C. H. No. 1 Flange; and 6¼¢ for Bay State X Flange for fire boxes, &c. Bay State Sheet Iron is quoted at 6½¢ for "A," for severe stamping, satchel and lock purposes; 5½¢ for "B," for ordinary stamping, galvanizing and corrugating purposes; 5¢ for "C," a double-seaming Iron for coal-hod, pan, elbow and similar purposes; 5¼¢ for "D," for trunk purposes. *Copper* has not realized the anticipations of those who predicted that higher prices would follow the recent large contracts of the mining companies. The companies put 14,000,000 of their future product under contract at 19¢, but since that time there have been sales of outside holdings of Lake in 25,000-pound lots at the same figure. Futures are held at 19½¢. A moderate jobbing trade prevails at 19½¢ for Lake, and 18½¢ @ 19¢ for other brands. There has been no change in the combination prices of Manufactured Copper. We quote: New Sheathing Copper, 26¢; Braziers', 28¢, and Bolts, 28¢; Bottoms, 31¢; American Yellow Sheathing Metal, 17¢ @ 18¢; Yellow Metal Bolts, 20¢; and English Yellow Metal Sheathing, 14¢, in bond. *Lead* is dull at the recent decline, and we quote round lots of $4.25 @ $4.30, and small store parcels at 4½¢ @ 4¾¢. The prices of manufactures are unchanged, as follows: Bar, 6½¢; Pipe, 6½¢; Sheet, 7¢; Tin-lined Pipe, 15¢; Tin Pipe, 40¢; all less 10 % to the trade. No. 1 Solder, 11½¢. *Spelter* is held higher, 5⅞¢ being the asking price for Western, and 4¾¢ @ 4⅞¢ for Remelted. Retail lots command ⅛¢ @ ¼¢ above these figures. *Tin* has continued dull, and there have been considerable sales for exportation at figures as low as 19¢, cash. In this market there are buyers at 19¼¢, 30 days, but sellers appear to be unwilling to accept that figure. There is a moderate jobbing demand at 20¢ @ 20½¢ for Straits and English L. & F.—*Commercial Bulletin.*

LOUISVILLE.

Messrs. GEO. H. HULL & Co., Commission Merchants, report to us as follows, under date of December 31: Sales during the last week were very light, as they usually are at this season of the year. Business during the fore part of the month, however, was large. As a good many of the foundries must come into the market after New Years, a large trade is anticipated then. Prices are low, as indicated by our quotations, but very firm. The following are cash quotations. Four months' prices are 50¢ @ $1 ₱ ton more.

FOUNDRY IRONS.	
No. 1 Hanging Rock, Charcoal	$27.00 @ 28.00
No. 2 " "	26.00 @ 30.00
No. 1 Southern, Charcoal	24.00 @ 25.00
No. 2 " "	23.00 @ 24.00
No. 1 Hanging Rock, Stonecoal and Coke	23.50 @ 24.00
No. 2 Hanging Rock, Stonecoal and Coke	22.50 @ 23.50
No. 1 Southern, Stonecoal and Coke	23.00 @ 25.00
No. 2 " " "	22.50 @ 23.00
"American Scotch"	22.00 @ 24.00
Silver Gray	18.00 @ 22.00
Scotch	28.00 @ 30.00
MILL IRONS.	
No. 1 Charcoal, Cold-short and Neutral	$22.00 @ 24.00
No. 1 Stonecoal and Coke, Cold-short and Neutral	21.50 @ 22.00
No. 2 Stonecoal and Coke, Cold-short and Neutral	20.50 @ 21.00
No. 1 Missouri and Indiana Red-short	26.00 @ 27.00
White and Mottled, Cold-short and Neutral	19.00 @ 20.00
CAR WHEEL AND MALLEABLE IRONS.	
Hanging Rock, Cold-blast	35.00 @ 42.00
Alabama and Georgia, Cold-blast	35.00 @ 40.00
Kentucky, Cold-blast	35.00 @ 40.00

W. B. BELKNAP & Co., Iron and Steel Merchants, Nos. 113 and 115 Main street, report to us as follows, under date of January 1: Business has been frozen up the past week, and nobody except the coalmen can report a brisk trade. Outdoor work is out of the question, and most purchases are for delivery when the thermometer rises. The recent advance on Nails is well maintained, though sales are reduced to nil. Bar is firm at its practical advance of $2 ₱ ton. Many of the mills hereabout are closed for annual repairs, and cannot deliver special orders at present. Coal has advanced 6¢ a bushel, and is now selling at 18¢. Next week we expect to give definite quotations, as the opening prices will be somewhat fixed. Navigation on the Ohio River has been completely suspended. At points not far above here it is frozen over so as to admit of persons crossing. Here the heavy ice extends far out from either shore, and is an effectual preventive against the movement of boats.

NEW ORLEANS.

Messrs. MINNIGERODE & Co., dealers in Railway Supplies, 61 St. Charles street, write as follows under date of December 31: We have this week to report a much improved condition of our market. In the matter of old materials we note an advance in Old Rails and Scrap of $1 ₱ ton, with great scarcity of both and brisk inquiry. In new materials we find Iron Rails steady at the recent advance. Southern mills want $48 @ $50 at mill for Standard Sections. Foreign New Rails may be quoted at about $46 for Iron and $62 for Steel at seaboard. Spikes have advanced about ¼¢ ₱ lb, and Fastenings are also higher and very firm. It is expected that the recent advance of 25¢ ₱ keg on Nails will be followed at the next meeting of the association by a further advance of 25¢. Everything in railroad circles is very active. During the past three months contracts have been let for over 1000 miles of Rails and track materials for construction in the States of Louisiana and Texas alone.

ST. LOUIS.

Messrs. HOFFER, PLUMB & Co., Pig Iron and Iron Ore Merchants, 417 Pine street, write us as follows, under date of January 1: The year opens with the fairest prospects, the demand being large, prices fair and supply scarcely adeqate. Consumers are full of orders, and there is a general feeling of buoyancy.

HOT BLAST CHARCOAL.

Missouri	$27.00 @ 29.00
Southern	25.00 @ 27.00
Hanging Rock	28.00 @ 29.00

COKE AND COAL.

Missouri	26.00 @ 28.00
Southern	25.00 @ 27.00
Ohio	25.00 @ 26.00

MILL IRONS.

Cold-short	23.00 @ 24.00
Red-short	23.50 @ 24.50

CAR WHEEL IRON.

Missouri	..... @ ...
Southern	38.00 @ 40.00
Ohio	35.00 @ 45.00

ORE.

For fix, nominal	10.00 @ 12.00
For furnace, "	6.50 @ 7.50
Brown Hematites	no market.

BALTIMORE.

R. C. HOFFMAN & Co., Iron and Commission Merchants, report the Pig Iron market as follows, under date of January 3: We have no change to report in the Iron market. Transactions during the past week were limited, owing to the holidays, but prices remain firm at last quotations:

Baltimore Charcoal Wheel Iron	$38.00 @ $40.00
Virginia C. B. "	38.00 @ 40.00
Anthracite No. 1	25.00 @ 26.00
" No. 2	22.00 @ 24.00
" No. 3	20.00 @ 21.00
" Mottled and White	18.00 @ 19.00
Charcoal C. B. Blooms	55.00 @ 60.00
Refined Blooms	45.00 @ 50.00

W. N. WYETH, Iron and Steel Merchant, 46 and 48 South Charles street, reports us the following, under date of January 3: Trade remains about same as last reported, with prices firm:

Ref. Bar Iron, 1 to 6 by ⅜ to 1	₩ lb	2½ @ 2¾¢
" " 1 to 4½ by 1½ to 2	₩ lb	2½ @ 2¾¢
" ¾ to 2, Round and Square	₩ lb	2½ @ 2¾¢
Hoop Iron, 1½ wide and upward	"	3½ @ 3¾¢
Band Iron, from 1¼ to 4 in. wide	"	3 @ 3¼¢
Horse-shoe Iron	"	3¼ @ 4 ¢
Norway Nail Rods	"	6¼ @ 6½¢
Black Diamond Cast Steel	"	13½ @ 14½¢
Machinery Steel	"	9 @ 9½¢
Cast Spring Steel	"	8 @ 8¾¢
Common Horse Nails	"	10 @ 14 ¢
Perkins' Horse shoes, ₩ keg of 100 lbs		$4.37½
" Mule shoes		5.37½

Putnam Horse Nails	₩ lb	21	22	23	24	26¢
Globe Horse Nails	₩ lb	20	21	22	23	25¢
Railroad Spikes				3	@	3¼¢

Less list discount to the trade.

	10	9	8	7	6

RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, writes as follows under date of January 3: Business has been almost suspended by an embargo on water navigation, and partially on rail, by the unprecedented cold weather, combined with the holiday season. This market is firm at the following quotations:

Scotch Pig Iron	$24.00 @ 27.00
American Scotch Pig Iron	27.00 @ 29.00
No. 1	25.00 @ 28.00
No. 2	22.00 @ 25.00
No. 3	21.00 @ 23.00
Mottled and White	19.00 @ 21.00
Virginia Charcoal C. B. Wheel Iron	38.00 @ 41.00
Old Rails	26.00 @ 28.00
Old Wheels	28.00 @ 29.00
Wrought Scrap, No. 1	22.00 @ 25 00
Cast. Machinery Scrap	21.00 @ 22.00
Richmond Refined Bar Iron	2¾ @ .....
Horse Shoes, Tredegar	@ 4.00
Mule " "	@ 5.00

CINCINNATI.

JANUARY 3.—*Pig Iron.*—Transactions during the past week were in small quantities, evening up for the year, and the same will doubtless obtain for this week. The outlook is as before on a large business, and firmer prices for all kinds. Sales have been confined mostly to Foundry grades, and at about the following quotations:

Hanging Rock Charcoal, Best Foundry, 4 mos. to cars	$26.00 @ 27.00
No. 1 Hanging Rock Charcoal, Foundry	26.00 @ 26.50
No. 1 Hanging Rock Charcoal, Coke, Foundry	23.00 @ 23.50
No. 2 Hanging Rock Charcoal, Coke, Foundry	22.00 @ 22.50
Stonecoal Foundry	22.00 @ 22.50
No. 1 Stonecoal, Softeners	21.00 @ 21.50
No. 2 Stonecoal, Softeners	20.50 @ 21.00
No. 3 Stonecoal, Silvery	19.00 @ 20.00

Manufactured Iron.—Very firm at $2.15 @ $2.25, card rate; offerings of large orders refused at less than $2.25 rate.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(*From our Regular Correspondent.*)

LONDON, ENG., December 20, 1880.

THE TRADE OUTLOOK

cannot be truthfully said to have undergone any very material change during the seven days which have elapsed since the date of my last week's letter. As a matter of fact, we do not look for any trade movements of importance during the last few weeks of the year, so that, even if we had now to complain of a great amount of stagnation, the matter would not be regarded as being of especial moment, but rather as being an ordinary characteristic of the penultimate business week of the closing year. It chances, however, that at the moment we do not hear many serious complaints. On the contrary, the general situation may be described as being one of considerable content—not of perfect satisfaction, I will admit, with things as they are, but with a very widespread idea that although matters are not, by any means, at their best, yet that they are anything but at their worst. Broadly interpreted, this opinion may be read as meaning a moderate degree of current satisfaction and a strong reliance upon the contingencies of the early future. As I have given your readers to understand in more than one of my recent letters, there is a very respectable turnover now in progress in several of our leading metallurgical industries — perhaps in the great majority of them. This current briskness is of itself rather cheerful and cheering to all concerned, and it may, perhaps, be largely responsible for the buoyancy of tone which is generally observable throughout our markets. The year 1880, it is felt, will certainly end in a manner which will stand a comparison with most of its recent predecessors, both as regards orders in hand and the course of prices. Further than that, there are many circumstances which give greater confidence as to the possibility of commerce in the new year than has been the case for several years past toward the Christmas season. To these circumstances it would scarcely be practicable for me to make detailed allusion at present, but I may point to the state of the crude iron markets as good examples of that which I allege. In these markets we are confronted by reserve stocks and a current production greater than ever before known, particularly as regards Scotch, Cleveland and hematite pigs; yet, in the teeth of these facts, prices are not merely steady, but are advancing, and there is a concurrence of firmness in all directions. This, alone, is a remarkable indication of a hopeful feeling entertained, and it is confirmed by the knowledge that buyers are almost generally endeavoring to make themselves safe by entering into contracts for deliveries extending over a considerable portion, or the whole, of the first quaater of 1881. Producers, as a rule, are by no means inclined to bind themselves and sacrifice their independence of action by agreeing to such proposals, yet we find that a certain number of them have not sufficient faith in the future to resist the temptation, and have, accordingly, entered into arrangements for forward deliveries at prices somewhat above those now current. It is not possible to ascertain to what extent this forward selling has extended, but there is reason for believing that it is not at all widespread, the fears of makers that they might again be made the footballs of speculators having overruled their inclinations to do business on the terms offered. At the same time, it is possible that a good deal of iron may have been so arranged for, and it is the expectation that such is the case, which has led to the general firmness of the market. Leaving this question for the time being, and going on broader grounds, it is becoming increasingly evident that the course of prices early in January will, of necessity, be influenced by the determination of the exact quantity of iron held in Scotland. The quantity in Connal's Glasgow stores is, of course, ascertained and published week by week. The tonnage in makers' own yards, on the other hand, is only definitely ascertained and made known at the end of each year, although an approximate idea is doubtless possessed by a few knowing ones at other times. The ascertaining of the exact total reserve is a matter left with the Committee of Ironmasters, who will this year meet on December 28, for the purpose of receiving and formulating the returns made to them. The outcome of their meeting will be awaited with the highest possible interest and expectancy, inasmuch as any notable comparative increase or decrease would inevitably have an immediate influence on prices, not only in Scotland itself, but elsewhere. At present the matter is regarded as a profound secret—a secret not to be fathomed in anticipation at any price. Last year the total stock of pig iron in Scotland at Christmas was 745,000 tons, of which 415,000 tons were in Connal's warehouses. This year there will be, as nearly as possible, 500,000 tons in Connal's stores, and it is not at all unlikely that the aggregate quantity may be ascertained to be 830,000 to 850,000 tons. With the exception of the strike period in the early autumn, the output has been heavy and in advance of last year. Against that fact is to be set an increase in the shipments of about 95,000 tons, and possibly an augmented local consumption. Besides these points, it is known that makers have been pouring iron into store in order to obtain warrants for it, warrants having been much more readily saleable during a greater portion of the 12 months than the iron itself. For the last-named reason, there is an impression that makers may not, after all, have so much iron in their yards as is feared. Whether that impression is likely to be verified by events, or the contrary, cannot now be at all accurately inferred, but my own opinion is that quite as much stock is on hand as is anticipated, and that in all probability it will be found to be nearer (or on the upper side of) 850,000 tons rather than the low total of 800,000 tons, which is indicated by some of the vaticinators on the subject. If practicable, I will contrive to let you have the exact figures by wire as soon as known, so that your readers may be posted as to a fact which, more than any other, is certain to affect the course of prices on this side. It is already known that in Cleveland there will be about 320,000 tons in store by the end of December, so that under the most favorable conditions possible we shall have 1,100,000 tons of pig in reserve in those two districts alone, leaving out any account of the other iron making localities, where no statistics are published. These are big figures with which to begin a year, and it requires a good deal of assurance and buoyancy to maintain confidence and raise prices in spite of them. Such a disposition exists, notwithstanding, and I am under the impression that it will need nothing more than a fair amount of buying on your behalf to bring about a very marked revival. Your recent mail advices seem to give a decidedly favorable account of your various markets, and are so hopeful in tenor as to encourage many persons to indulge in day dreams (?) of a most roseate hue. Should these reports continue for two or three weeks longer, I fancy we may expect an upward movement here.

SCOTCH PIG IRON

has been steadily firm during the week—particularly during the earlier portion of it—and warrants are some pence better than at the date of my previous report. A further increase in the operative furnaces has been made, bringing up the total number now blowing to 114 ordinary and 8 hematite, as against 100 ordinary same date last year. The stock in Connal's stores has likewise been augmented to the extent of 3108 tons on the week, making the quantity held at date 492,568 tons against 410,147 tons a year ago. The total increase in shipments in 1880 has been 94,621 tons, wholly to foreign destinations—indeed the coastwise shipments have decreased 2000 tons on the year to date. The imports of Middlesboro' pig into Grangemouth have increased 13,571 tons, on a total of 266,546 tons this year. Most of this increase has taken place quite recently. For ballast pig 45/ is still quoted. Good No. 1 brands are steady, according to John E. Swan & Bros., Limited, who make them a speciality. Writing from Glasgow December 17, James Watson & Co., said: "The iron market opened firm this week and the price of warrants advanced about 1/, since then the tone has been quieter and only a small business has been transacted. On Monday the market opened at 50/11½, cash, improving to 51/2 per ton, and on Tuesday the advance continued, with a good business done between 51/4½ and 51/10, cash. On Wednesday transactions, took place between 51/10½ and 51/7½ per ton, and yesterday the market was steady, with a limited business done at 51/7½ and 51/8, cash. To-day the price fluctuated between 51/8½ and 51/6½ per ton, closing with buyers at the lowest point. The shipments last week were 9049 tons, as compared with 5584 tons for the corresponding week of 1879. We quote:

	No. 1.	No. 3.
G. M. B., at Glasgow	52/6	50/6
Gartsherrie, at Glasgow	63/	53/3
Coltness, "	63/	53/6
Summerlee, "	62/	52/
Langloan, "	63/	53/3
Carnbroe, "	58/	53/
Calder, "	62/6	53/
Glengarnock, at Ardrossan	57/	53/6
Eglinton, "	53/	50/6
Dalmellington, "	53/	50/6
Shotts, at Leith	63/	54/6
Kinneil, at Bo'ness	53/6	51/
Carron, at Grangemouth	53/9	53/6

CLEVELAND PIG IRON

is steady at the moment at the following prices, all for net cash, f. o. b. at makers' wharves in the Tees:

No. 1 Foundry	44/6	Mottled	38/3
2 "	42/	White	37/9
3 "	39/9	Refined Metal	55/
4 "	38/3	Kentledge	45/
No. 4 Forge	38/9		

Throughout the whole of December to date the shipments from the port of Middlesborough alone have averaged nearly 300 tons daily, a rate of tonnage much above the average of the season. About 1300 tons of pig have been added to Connal's Middlesboro' stores within the week. Warrants (Cleveland) are to be had at about 40/9 per ton, but they are not dealt in on a scale which compares with the Glasgow transactions. The plate mills of the whole north of England are engaged at the moment. In the South Durham (Darlington, Consett, &c.) district alone the production of ship plates reaches 30,000 tons monthly, or over 1000 tons for every working day. Of this about one-half is the production of the Consett establishment. All the foundries, engineering works, &c., of Cleveland are well and fully employed.

WEST COAST HEMATITES

are held at the subjoined rates, which represent current quotations for small and average lots, but which may be shaded by 2/6 to, perhaps, 5/ per ton for large lines.

	No. 1.	No. 2.	No. 3.
Cleator	76/	74/	70/
Lonsdale	66/	65/	64/
Workington	66/	65/	64/
Lowther	66/	65/	64/
Moss Bay	66/	65/	64/
Harrington	66/	65/	64/
Solway	66/	65/	64/
Maryport	66/	65/	64/
Askham	64/	64/	63/

Nearly the whole of the furnaces along the West Coast of Cumberland and in Furness are in blast, and their output is nine-tenths disposed of on actual consumptive account. Matters look quite cheery for the new year, as the reports to hand from all parts of the manufacturing world speak of great activity in the rail trade. There are a few circumstances tending to restrain any sudden or great advance in smelters' quotations, but on the whole the outlook is good. At some of the works Irish ores are being worked up.

DEPHOSPHORIZATION

is just now very little heard of in outside circles; that is to say, there is nothing to speak of in the way of newspaper paragraphing or writing on the question, as was the case a short time ago. Although this is so, I believe it would be wholly and entirely wrong to conclude that the process has at all lost its interest, or that it is any more likely to fall short of complete success than it has been at any time since its first appearance on the stage of practical utility. I understand that Bolckow-Vaughan's are quite busy in their rail mills, where a large proportion of the material rolled down is that converted from Cleveland pig. These dephosphorized rails withstand all the ordinary tests of falling weights and the like, and are being put down on the lines of the Northeastern Railway Company—the company which virtually monopolizes the service of the whole of Cleveland. So well satisfied is Mr. Windsor Richards with his progress and with the general results of basic working, that he has almost cut off his ore importations from Spain, Elba, &c., and has "burned the boats," in a liberal sense, by selling some of the steamers which had been engaged in the traffic. Further than this, if my information is accurate, he is hurrying forward the construction of two additional 15-ton converters, which are also destined to be run on Cleveland pigs. The "hurry" of the matter is explained—with what degree of authenticity I do not venture to say—by the rumor that an order for 30,000 tons of rails is on offer to the concern, but cannot be accepted at present owing to the production of the works (2500 to 2800 tons weekly) being unequal to the demand. It is generally understood that two new concerns will shortly be started in Cleveland or Durham for steel making by the basic process. At Sheffield, Brown, Bayley & Dixon are quietly working out a way of their own, but I do not quite gather that they are proceeding exactly in the same lines of procedure as Bolckow-Vaughan's. Abroad, Messrs. Thomas & Gilchrist appear to be pushing their invention with much success, judging from the following paragraph which appears in the *Ironmonger* of Dec. 18: "The Teplitz Bessemer Works in Bohemia, following the example of the Witkowitz and Kladno Works, commenced the manufacture of steel by the Thomas-Gilchrist process last month, and have obtained entirely satisfactory results. It is understood that the new Bessemer works, erected specially for this process by Messrs. D. Wendel at Hayange, will get to work early in February, while those of Messrs. Stumm will also be in operation early in the spring. Both these works will use the cheap phosphoric pig of German Lorraine." Messrs. Thomas & Gilchrist appear to be inclined to dispute Mr. Holley's laurels, as they are proceeding with a fresh patent for relining, repairing, &c., Bessemer converters.

THE TELEPHONE

has to-day received a serious blow—a shock, indeed—which is more than electrical. The post-office is declared to have a monopoly of telegraphing messages; the telephone is a method of sending messages; therefore the post-office has a monopoly of the telephone in Great Britain. Such an issue is of tremendous consequence to us. It has been so decided by Mr. Justice Stephen this afternoon, after a very long trial and a most patient hearing on the part of the judge. The suit was one of the Postmaster-General against the Edison Telephone Company, and in it a number of able counsel and eminent scientific witnesses have appeared. The Court of Exchequer, in which the case has been tried, has been graced with all kinds of telegraphic, magnetic, telephonic, photophonic and other variations of the original idea, and the judge, counsel and other persons present have not only been indulged in a series of nice experiments, but have had the privilege of learning all about currents, resistance, ohms, statics and dynamics, and the dreadful jaw-breakers in which your purely scientific witness revels. The arguments on both sides have been purely legal quibbles, or admirable examples of persiflage on minor points, but the result has been as I have stated—the Postmaster-General has gained the victory. As the matter will no doubt interest many of the readers of *The Iron Age*, I append a brief summary of the judgment given by Mr. Justice Stephen: "Having referred to the circumstances connected with the formation of the company to work Mr. Edison's invention, his lordship described the construction and mode of working the telephone, and the terms on which and the method by which messages were transmitted from one customer of the company to another. He then proceeded to point out that by the 4th section of the 3d and 4th Vic., cap. 73, the Postmaster-General was given the exclusive privilege of transmitting telegrams within the United Kingdom, and by the 3d section the word 'telegram' was defined as meaning any message or other communication transmitted by telegraph; the term 'telegraph' was, in addition, described as 'including 'any apparatus for transmitting messages or other communications by means of electric signals.' By these enactments, as well as by the Telegraph Act of 1873, the Postmaster-General was invested with the exclusive privilege of transmitting messages or other communications intended for transmission by any wires used for the purpose of telegraphic communication, or by any apparatus for transmitting messages or other communications by means of electric signals. The result of definitions laid down seemed to be that any apparatus used for transmitting messages by electric signal was a telegraph, whether wires were used or not, and that any apparatus using wire was a telegraph, whether the communication was made by electricity or not. The case for the Crown was that every conversation held between A and B, who were customers of the company, and used their apparatus, was 'a message or other communication transmitted by a wire used for the purpose of telegraphic communication, and that every communication was transmitting a telegram within the meaning of the Act.' His lordship having referred to the arguments put forth for the defendant, and having read the opinions of several eminent scientific men as to the difference between telephonic communication and the ordinary telegraph, said that he did not consider it necessary to express any opinion on the controversy, which was more scientific than legal. His opinion was that an apparatus connected by wires for the purpose of transmitting communications was a telegraph within the definition laid down in the act of 1863, and the wording of the act was wide enough to cover further instruments which were not then invented which involved the use of electricity conveyed by wires for the purposes of communication. In looking at what was the real meaning and intention of the various enactments relating to the subject, it was difficult to believe that the Legislature in passing them intended to grant a monopoly in telegraphic communication to the Postmaster-General which was liable to be defeated, and the language of the statutes was to be so construed as to be limited to the then state of the most progressive of all the sciences, and he, therefore, held that the telephone was a telegraph within the meaning of the acts of 1869 and 1863. The conversations held through a telephone was either a message or communication transmitted by telegraph, that there was no doubt the Legislature meant to prohibit private communication, and that every conversation through the telephone was an infringement of the Postmaster-General's exclusive privilege. He, therefore, gave judgment for the Crown, with costs. Pending an appeal, however, no injunction would be issued to restrain the Telephone Company from carrying on their business, provided they undertook to keep an account of all messages transmitted over their wires."

The outcome of this litigation will be, I presume, that the telephone companies will be bought up by the government, who will either carry on the exchanges now in operation or will "smash them" for the benefit of the ordinary post office telegraphs. The decision is to be regretted, especially as furnishing a capital example of the way we *don't* have internal free trade. Apart from the legal view of the case, I think we must all deeply deplore a decision which will utterly put a stop to all further progress with any apparatus for facilitating local or intramural intercommunication in this country. Government monopolies have their advantages, but they are not given to encourage invention and progress.

FOREIGN.

FRANCE.

(*Moniteur des Interets Materiels.*)

PARIS, Dec. 19, 1880.—*Metals.*—The weather has continued mild and business dull. Metals have, however, been tolerably active and well sustained; there has been even a slight improvement in all but Copper, the latter remaining steady. We quote at the close *Copper*, Chili Bars, 161.25 @ 163.75 francs the 100 kilos.; *Tin*, Banca, 255 francs; Billiton, 252.50; Straits and Australian, 250, and English, 245; *Lead*, 37.50 @ 38.50, and *Spelter*, 41.50 @ 42. *Iron.*—The improvement in values alluded to in our last seems to be maintained. Dealers are getting 18.50 francs per 100 kilos. for Merchant Iron, and the price may soon be advanced to 20 francs. Pig Iron follows in the same upward direction. Iron for flooring is worth 18; Sheet Iron, 28 @ 30, and Nails No. 18, in bulk, 30 francs. At the North the basis for Merchant Iron is still 17, with a slight upward tendency; it will soon probably be 18. In the Haute Marne a good many orders are dropping in and prices are looking up a little. Coke Iron sells at 18 @ 18.50, and Charcoal ditto at 24 @ 25. There is great activity in the Ardennes; all works are busily engaged. Hardware manufacturers and nail makers have got many orders on hand. They quote Merchant Iron, 17 @ 17.50. In the Meurthe and Moselle "Affinage" Pig Iron has advanced from 6 francs to 6.20 francs. The make of blast furnaces there is engaged for the first half year of 1881. "Moulage" Pig has risen to 8 francs No. 3, an advance of 2 francs. *Coal.*—The market here is flat in consequence of the mild weather, but at the North and in the Pas-de-Calais there is still a fair amount of activity in the demand for Coal for industrial wants.

BELGIUM.

(*Revue Universelle.*)

BRUSSELS, Dec. 19, 1880.—*Iron.*—The tendency here has become a much firmer one, in response to the favorable advices received from France and the rather numerous orders received from America and the extreme East. The branches most favored with commands are the steel works, the machine shops and the bolt works. Steel is in good request; Pig Iron is firmer; although no downright advance has been established during the week, prices are decidedly firmer; Pig Iron is moving off with greater ease within the past few days. Merchant Iron has been well upheld, and has sold at 11.50 francs. Some orders for the same have dropped in and a good many inquiries have been made. The general aspect is an improved one, and everybody now expects a vigorous opening of trade as soon as we shall have fairly got into the new year. There are, indeed, no disturbing elements perceptible in any direction, and we have such a moderate range of values that there is plenty of room for gradual improvement. All we hope for is that whatever advance there may be in prospect may not be a precipitate one, started and supported by speculation. *Coal.*—This fuel still remains in good position, the shipments made to all quarters being active. If the weather had been cold the movement would have been still more impulsive. As it is, it is satisfactory.

GERMANY.

(*Borsenhalle.*)

HAMBURG, December, 1880.—*Iron.*—Our Dortmund correspondent writes: "The Iron market here has hardly undergone any change since I last reported to you. Activity at the Steel works remains satisfactory, although various lots of Steel Rails have been sold to go abroad at prices involving loss to the producer. In the remaining branches a greater demand is not yet perceptable, but the tendency in rolled and forged Iron, as well as Sheets, is a little firmer. There is a somewhat better prospect also for Siegen Pig, and it may be stated that there is a belief that business in general is approaching a revival, but nobody expects a rise in articles in the Iron line similar to the one we had a year since. Prices are, meanwhile, unaltered. We quote Bar Iron 115. No. 2 Sheets 180 and Boiler Sheets 100, basis, at the works. *Coal.*—The continued mild weather is not favorable to Coal; so far there is no decline, but if winter does not set in in good earnest soon quite a tumble in prices seems inevitable. For the moment all the Coal turned out is disposed of at remunerative rates. Shipments begin to flag a little; we approach the dull Christmas time." There is no change in metals.

HOLLAND.

(*Koch & Vlierboom.*)

ROTTERDAM, Dec. 14, 1880.—*Tin.*—The market during the week under review has been very quiet. Banca may be had to-day at 55 guilders and Billiton at 54.75 per 50 kilos. Dec. 21.—Since the above was written the price has risen 25¢ per 50 kilos.

AUSTRIA.

(*Austrian Trade Journal.*)

VIENNA, Dec. 19, 1880.—*Iron.*—In common with the generally firmer feeling on the Continent, the important orders received in Austria from France for locomotives and railroad cars, as well as the building of iron stores at Pesth, have spread more confidence. The consequence of all this is less anxiety on the part of producers to do business at current rates, at least for future delivery. This is all the more noteworthy, as but a week or two ago there were few who believed that prices could be upheld throughout the dull season now at hand. The conviction seems to have been gained now that prices have at all events touched bottom. The two locomotives now building here will keep our locomotive shops going for six months to come. There are good hopes, too, that the good harvest we have had in Austria will improve the coming spring trade, and that then the local railroads will all be built with vigor, and more so than has hitherto been the case; at least there have been granted a good many concessions for new lines. Meanwhile our rolling mills are not very busy, but have, on the contrary, discharged some hands. The smaller machine shops, on the other hand, have received many orders for repairs and small machinery. The Steyr Arms Manufactory is busily engaged. The same now employs 3000 operatives, and is filling contracts for Greece, Roumania, France and China. Hardware is inactive, but prices are firm. *Metals* are steady. We quote Copper, 70 @ 85; Tin, 121 @ 123; Lead, 20.50 @ 22; and Spelter, 19 @ 20.50 florins the 100 kilos.

CHILI.

(*Weber & Co.*)

VALPARAISO, Nov. 2, 1880.—*Copper.*—The market opened at $19 per quintal on shore, at which more would have been taken, but holders insisted upon $19.25, at which a couple of lots, Chanaral and Lambert, sold, when producers withdrew, expecting lower exchange in view of the failure of peace negotiations. Finally, a few sales were effected at $21 @ $21.15. Total sales, 10,145 quintals. *Nitrate.*—Under the influence of the excitement in the exchange market large dealings took place, notwithstanding dull advices from Europe. Later on these improved, while exchange declined: holders asked more, but as suitable vessels are scarce little was done. Sales, 204,300 quintals at $3.25 @ $3.55. Shipments in October, 28,000 tons to Europe and 4600 to the United States, all from Iquique, Taltal and Antofogasta. *Coal.*—A cargo of Cardiff sold at 31/ for Iquique, and of three cargoes Orrell, just arrived, one brought the same price for steamer use. For the coast this figure cannot be got as long as the stock there is sufficient. *Exchange* has, from 30¼d., declined to 28d., 90 days in London.

The Thomas Patent in Germany.—The *Berliner Borsen-Zeitung* says that the action *in re* the Thomas-Gilchrist patent, which has been brought against the Hörder Bergwerks-und Hütten-Verein, and against the company owning the Rheinische Stahlwerke, has again been decided in favor of the companies sued upon appeal. The new judgment, moreover, is said to decide several auxiliary points in favor of the above companies, which had not been touched upon in the first judgment, or had been differently explained.

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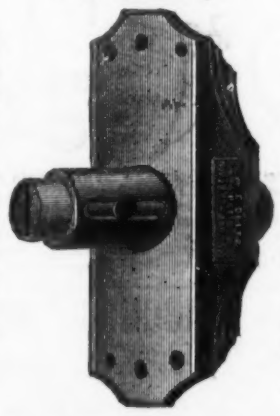

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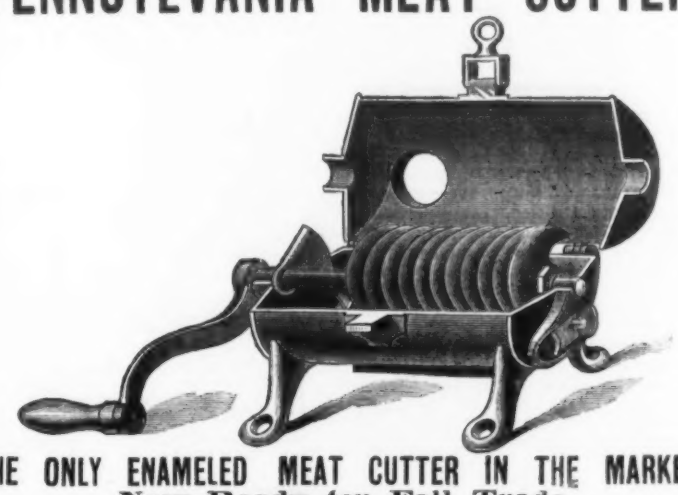

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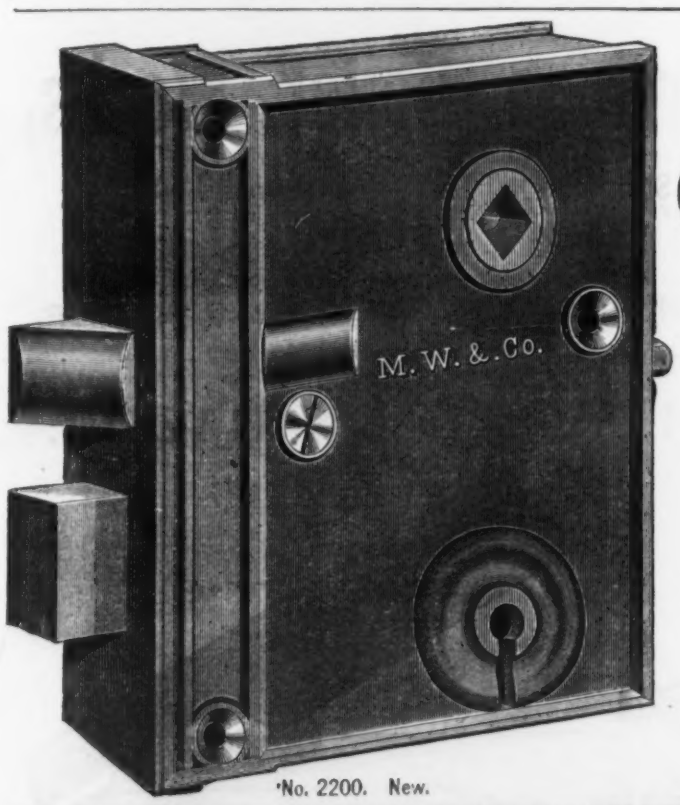

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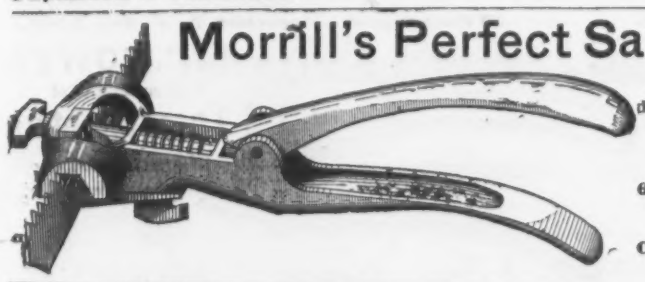

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Chambers Street,
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RHODE ISLAND HORSE SHOE CO.,

MANUFACTURERS OF

Horse, Mule & Snow Shoes of the Perkins Pattern.

Works at Valley Falls, R. I., and Buffalo, N. Y. Office, 31 Exchange Place, Providence, R. I.

W. CARPENTER, President. C. H. PERKINS Gen'l Manager. B. W. COMSTOCK, Secretary.

WALKER'S

Forged Horse Shoes,

SHOENBERGER'S

Patent Toe Calks,

Superior to any in market.

Send for prices and samples.

A. BUSSING, General Agent,
4 Warren St., New York.

SCOVILLE'S PATENT

Chilled Hay Fork Pulleys.

(Patented July 10, 1877.)

Superior to all others.

The Trade and Jobbers Supplied.

Prices and terms on application.

J. S. & M. PECKHAM,
UTICA, N. Y.

Sole Agents.

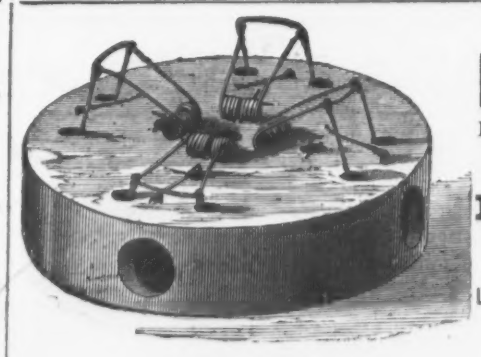
BUCK BROTHERS, Millbury, Mass.

The most complete assortment in the U. S. of

Shank, Socket Firmer and Socket Framing Chisels,

PLANE IRONS.

CAUTION.—Buyers should be on their guard and not have inferior goods palmed on them by unprincipled persons, who represent them as our make. Our tools are stamped "BUCK BROTHERS," and our labels have on our trade-mark, also "Riverlin Works."



"Common Sense"

MOUSE TRAPS,

For Home and Export Trade.

BEST IN MARKET.

RIPLEY MFG. CO.

Unionville, Ct., U. S. A.,

Manufacturers of

Lemon Squeezers, Mallets, Rosewood Faucets, Patent Boot Jacks, and Housefurnishing Ware.

Hose Pipe Nozzles.—Who is going to invent the nozzle of the future? There is no nozzle that we have ever seen that seems to us to control the stream it delivers as it should do. Instead of projecting a solid stream for a long distance, the water breaks soon after leaving the nozzle, and soon sprays and breaks up altogether. We often hear of steamers throwing 250 and 300 feet, but we recently heard a veteran chief say that he had yet to see the apparatus of any kind that would throw a solid stream 100 feet. The difficulty may be all with the water, which is naturally inclined to separate, but we are of the opinion that part of the trouble lies in the construction of the nozzle. An experiment made at Boston by putting a core into a play pipe, and thus dividing the stream into four parts, depriving it of its rotary motion, showed a gain of 30 feet in distance playing. But even this does not seem sufficient. Our steamers give us power enough for throwing, and the hose in use gives every facility for carrrying a large volume of water. There should be some means devised for delivering that volume in a solid stream at long distances. Great difficulty has been found in making nozzles operate uniformly at all times. A manufacturer of steamers once found a nozzle that gave him great satisfaction; with it his steamers could throw greater distances than with any he had ever tried before. He ordered half a dozen just like it. The half a dozen were made precisely like the first, but never equaled it in delivering water. There is much to be learned yet regarding this question of delivering water on fires, and the exact relation existing between pressure, hose, play pipes, nozzles, and the friction of water.—*Fireman's Journal.*

The credit of the invention of binocular glasses has been usually assigned to a certain Bohemian friar, Father de Rheita, who died at Ravenna in 1660. His treatise was published in 1645. In 1677 there appeared in Paris a volume entitled "La Vision l'arfaite," by Pere Cherubin, of Orleans, which contained an account of some improvements on de Rheita's discovery, illustrated by excellent copper-plate engravings. Lately, however, Signor Govi has unearthed in the Bibliotheque Nationale a printed document which proves the antiquity of binocular glasses to be a little more remote. This document is a placard by one Chorez, of Paris, and says that the "admirable lunettes" it describes and which are represented by accompanying figures, were invented by Chorez and dedicated to the King in 1625.

Two vagrants, named Barney Duffy and John Mahoney, on Christmas evening laid down on the cinders carted from the Passaic rolling mill on the vacant lots at the junction of the Newark branch of the Erie with the main line at the southern end of Paterson. Duffy was overcome by the gas from the smoldering heap, and Mahoney made him coffee in an old tin can, and then procuring aid carried him to St. Joseph's Hospital near by. Mahoney went back and lay down on the cinders. He was found dead and burned to a crisp, his toes having been burned completely off. He had been asphyxiated, and the wind had freshened in the night and fanned the cinders to a glow. The body was still burning when found by John Flanagan.

Messrs. Graham & Haines, of this city, exhibited the Hubbard binder and gleaner at the Smithfield Club show for the first time in England.

McCAFFREYS' PHILADELPHIA LIST.

Awarded for Superiority. Granted for Superior Goods. Silver Medal, Highest Premium.

McCAFFREY & BRO., PENNSYLVANIA FILE WORKS,

Fourth St. and Columbia Ave., Philadelphia, Pa.

These celebrated American Files and Rasps are acknowledged superior, wherever used, sold or exhibited.

PER DOZEN, NET CASH.

Inches....	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20
Flat, Square and Mill.....Bastard	1 44	1 60	1 85	2 20	2 63	3 00	3 65	4 30	5 25	6 10	7 30	8 75	10 50	12 45	14 75	20 00
Hand, Round, Half Round and Three Square.....Bastard	1 65	1 90	2 25	2 63	3 10	3 60	4 25	5 00	5 80	6 75	8 00	9 50	11 25	13 00	15 50	22 00
Flat, Square and Mill.....Second Cut	1 60	1 85	2 20	2 60	3 05	3 65	4 30	5 10	6 00	7 00	8 25	9 75	11 50	13 50	16 75	23 00
Hand, Round, Half Round and Three Square.Second Cut	1 80	2 15	2 55	3 00	3 50	4 10	4 75	5 50	6 40	7 70	9 15	10 65	12 50	14 50	17 75	25 00
Flat, Square and Mill.....Smooth	1 80	2 10	2 50	3 00	3 50	4 15	4 90	5 70	6 60	7 70	9 00	10 50	12 50	14 75	17 75	25 00
Hand, Round, Half Round and Three Square ....Smooth	2 05	2 40	2 80	3 35	3 90	4 55	5 25	6 10	7 10	8 50	10 30	12 00	14 00	16 00	18 25	28 00
Cabinet and Last Makers' Files and Rasps.....	.....	.....	3 00	3 50	4 00	5 00	6 00	7 00	8 00	9 50	11 00	13 00	15 00	.....	.....	.....
Flat, Round and Half Round Wood Rasps.....	.....	.....	2 55	3 00	3 50	4 20	4 90	5 70	6 50	7 70	9 00	10 50	12 00	.....	.....	.....
Tanged Horse Rasps.....	.....	.....	.....	.....	.....	.....	5 38	6 25	7 50	9 00	10 75	12 50	15 00	.....	.....	.....
Horse Rasps.....	.....	.....	.....	.....	.....	.....	4 20	4 90	5 75	6 70	7 80	8 90	11 00	.....	.....	.....
Half Round Shoe Rasps.....	.....	.....	2 25	2 75	3 25	4 00	4 75	5 75	6 75	.....	.....	.....	.....	.....	.....	.....

Inches....	3	3½	4	4½	5	5½	6	7	8	9	10	11	12			
Taper Saw Files, Single Cut.....	95	95	1 08	1 20	1 35	1 65	1 90	2 40	3 00	3 90	5 00	6 10	7 25	.....	.....	.....
Taper Saw Files, Double Cut.....	1 50	1 50	1 65	1 90	2 25	2 60	3 00	3 60	4 50	5 50	6 60	8 00	9 50	.....	.....	.....
Pit Saw Files.....	.....	.....	1 45	1 60	1 80	2 10	2 35	2 80	3 40	4 00	5 00	6 25	7 50	.....	.....	.....

EXTRAS.—All Dead Smooth double the price of Bastard. Coarse and Middle Cuts same as Bastard. Warding's advance one inch on Flat price. Extra Thin Files, Mill Saws with two round edges, Double Cut Mill, Beveled Edge Horse Rasps, Horse Rasps ¾ Rasp, Extra Tapers and Tapers cut to point advance one inch on their respective kinds. Double Tanged Mill advance two inches. Band Saw Files, Blunt and Taper, advance two inches on Taper price. Doctor, Pillar, Topping and Equalling take Hand price. Cant, Cross, Mowing Machine and Equalling cut on both edges advance one inch on Hand price. Knife and Feather Edge advance two inches on Hand price. Rifflers advance three inches on Hand price. Pin and Needle Files advance one inch on Hand Smooth. Hook Saw Files take Pit Saw price. Gin Saw takes Taper Double Cut list. Slim Tapers same as regular. Gulleting advance one inch on Round price. Tumbler advance two inches on Round price. Saddle Tree Rasps same as Cabinet. Horse Mouth Rasps, 4½ inches, $18 per dozen. Half inches not specified to take the even inches next higher. Any File or Rasp not mentioned takes price of nearest kind.

BEARDSLEY SCYTHE COMPANY, West Winsted, Conn.

Manufacturers of the well-known brands of

German Steel, Cast Steel and Silver Steel Grass Scythes.

ALSO THE

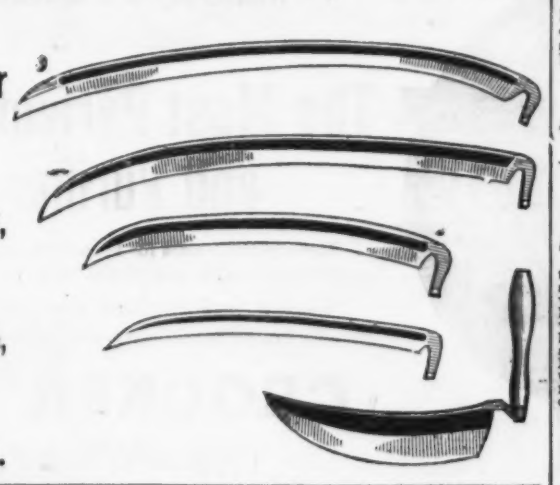
Clipper, Emperor, Beardsley's Golden Trimmer, Conqueror, Dutchman, Waldron, &c.

ALSO

Silver Steel, Clipper & Harvest Victor Grain Scythes, Common Pattern & Spear Point Hay Knives.

ALSO

Corn Knives, Bush & Weed Scythes.



LIGHTNING HAY KNIVES.

WEYMOUTH'S PATENT.

This knife is the best in use for cutting down hay and straw in mow and stack, cutting fine feed from bale, cutting corn stalks for feed, cutting peat and ditching marshes.

The blade is best cast steel, spring temper, easily sharpened, and is giving *universal* satisfaction. A few moments' trial will show its merits, and parties once using it are unwilling to do without it. Its sales are fast increasing for exports as well as home trade, and it *seems destined* to take the place of all other Hay Knives.

They are nicely packed in boxes, one dozen each, of 50 pounds weigh suitable for shipping by land or water to any part of the world.

MANUFACTURED ONLY BY

HIRAM HOLT & CO.,

East Wilton, Franklin Co., Maine.

For sale by the Hardware Trade generally.

Established 1855. KEYSTONE WORKS. *Centennial Award, 1876.*

GEORGE GRIFFITHS,

MANUFACTURER OF

Shovels, Spades, Scoops, Coal Hods, &c.,

Nos. 511, 513 and 515 Locust St.,

PHILADELPHIA, PA., U. S. A.

Send for Price List.

G. W. Bradley's Edge Tools.

Butchers' Cleavers,
Butchers' Choppers,
Axes and Hatchets,
Grub Hoe and Maitocks,
Mill Picks,
Box Chisels and Scrapers,
Ring Bush Hooks,
Ax Eye Bush Hooks,
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Watt's Ship Carpenters' Tools,
Carpenters' Drawing Knives,
Coopers' and Turpentine Tools.

FOR SALE BY

MARTIN DOSCHER, Agent, 85 Chambers Street, N. Y.

"HORSE SHOE PADLOCKS."

Made by **HORACE F. SISE,** New York.

The Iron-Masters' LABORATORY.

Exclusively for the

Analysis of Ores of Iron, Pig and Manufactured Iron, Steels, Limestone, Clays, Slags and Coal for Practical Metallurgical Purposes.

No. 339 Walnut St., Philadelphia.

With Branch at Warrenton, Virginia,

J. BLODGET BRITTON.

This laboratory was established in 1866, at the instance of a number of practical Iron Masters, expressly to afford prompt and reliable information upon the chemical composition of the substances above mentioned, for smelting and refining purposes. The object being to make it at once a convenient, practically useful, and comparatively inexpensive adjunct to the Furnace, Forge and Rolling Mill.

CHARGES TO IRON WORKS.

For determining the per cent. of Pure Iron in an ordinary Ore	$4.00
For the per cent. of Pure Iron, Sulphur and Phosphorus in do	12.50
For each additional constituent of usual occurrence	1.50
For those of unusual occurrence or difficult to determine, the charge must necessarily depend upon circumstances.	
For determining the per cent. of Sulphur or Phosphorus in Iron or Steel	7.00
For each additional constituent of usual occurrence	6.00
For the per cent. of Carbonate of Lime, and insoluble Silicious Matter in a Limestone	10.00
or each additional constituent	2.00
or the per cent. of Water, Volatile Combustible Matter, fixed Carbon, and Ash in Coal	12.50

For determining the constituents of a Clay, Slag, Coke, or of an Ash in Coal the charges will correspond with those for the constituents of an ore.

For a written opinion or letter of instruction the charge must necessarily depend upon circumstances.

Printed instructions for obtaining proper average samples for analysis furnished upon application

STRONG'S UNIVERSAL SASH-LOCK

Secures the Window perfectly in any position. Burglar proof. The wind cannot rattle the windows.

Is attached to the Sash easily, without in the least weakening or defacing it. No holes to be cut in casings, no attachments thereto, no abrasion no matter how long used, nor how severely. Is never out of order. Address

Universal Sash-Lock Co.,

S. W corner Hamilton and Liberty Streets,

ALBANY, N. Y.

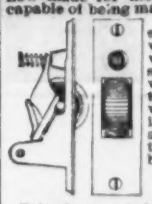
THE PATENT

Screw Window Balance.

A PRACTICAL MODERN INVENTION.

As Cheaply Applied to the Window as the Sash Pulley

Works on the edge of the sash, and is not attached to it. INSTANTLY ADJUSTABLE, and re-adjustable after application, without removing the sash, to the weight of the sash by the adjusting Screw controlling the Steel Adjusting Spring. INVALUABLE for windows without weights; and their use saves, to house owners, much money over weights, while their advantages are retained. STANDS ALONE IN BUILDERS' HARDWARE, in its line, and is sure of general use when its principles become known. They are now made for medium sash, and under; though capable of being made of any required power.



THEY WORK by mechanical, not spring power; the sash never sags with them, nor is their power weakened by the setting of any spring. They are adjusted to the weight of the sash over the tops of the sashes. They are out of sight when applied, and are not handled in working the sash. All its parts are made in duplicate, enabling the replacing of any part injured by carelessness in applying.

Durable, Cheap, Efficient.

Price $1 per set (four). Discounts to Dealers. Sample sets (four) sent to any address on receipt of $1, postage free. Address

ROB'T B. HUGUNIN, Sole Maker,

P. O. Box 523, Hartford, Conn.

For Sale in N. Y. by BUTLER & HUNTTING, 53 Dey Street

20,000 Sold the Second Year.

THE BEST ADJUSTABLE BAG HOLDER

In the World.

PRICE ONLY $1.50.

Sent free, on receipt of the price, anywhere in the United States.

Just the thing for the Farmer, Thresher, Miller, the Feed Store Grain, Potato, Guano and Phosphate dealers, Postmasters and Publishers, and to all others who use Sacks or Bags it is indispensable. A perfect and simple device, made of iron, and will last a life time. Sold by the Hardware trade everywhere. Orders solicited. The platform is extra if wanted. Agents wanted everywhere. Address

L. JEFF. SPRENGLE,

Sole Manufacturer,

Ashland, Ohio.

None can do without it for $1.50.

Send for a circular.

Special discount to the trade.

THE BUCKEYE

UPRIGHT HAND DRILL PRESS

Is giving the best of satisfaction in every instance. Specially adapted to the wants of Blacksmiths and Carriage makers. The trade are delighted with them. Price, $15. Circulars and terms by addressing the makers.

FOLGER & CO.,

Springfield, O.

HISCOX FILE MANUFACTURING COMPANY,

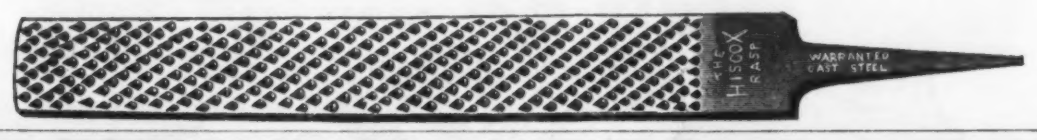
West Chelmsford, Mass.

Every File and Rasp of this Manufacture sold by

Hardware Dealers, or from the Works Direct,

IS WARRANTED EQUAL TO ANY FILE MADE.

If not found to be satisfactory, the money will be refunded upon application.



COLEMAN EAGLE BOLT WORKS

ESTABLISHED 1845.

WELSH & LEA.

NORWAY IRON CARRIAGE & TIRE BOLTS,

AXLE CLIPS, &c.

Highest and only Awards and Medals, Philadelphia, 1876, and Paris, 1878.

WORKS, Columbia Avenue, Hancock and Mascher Streets.

OFFICE, 145 Columbia Avenue (late 2030 Arch St.)

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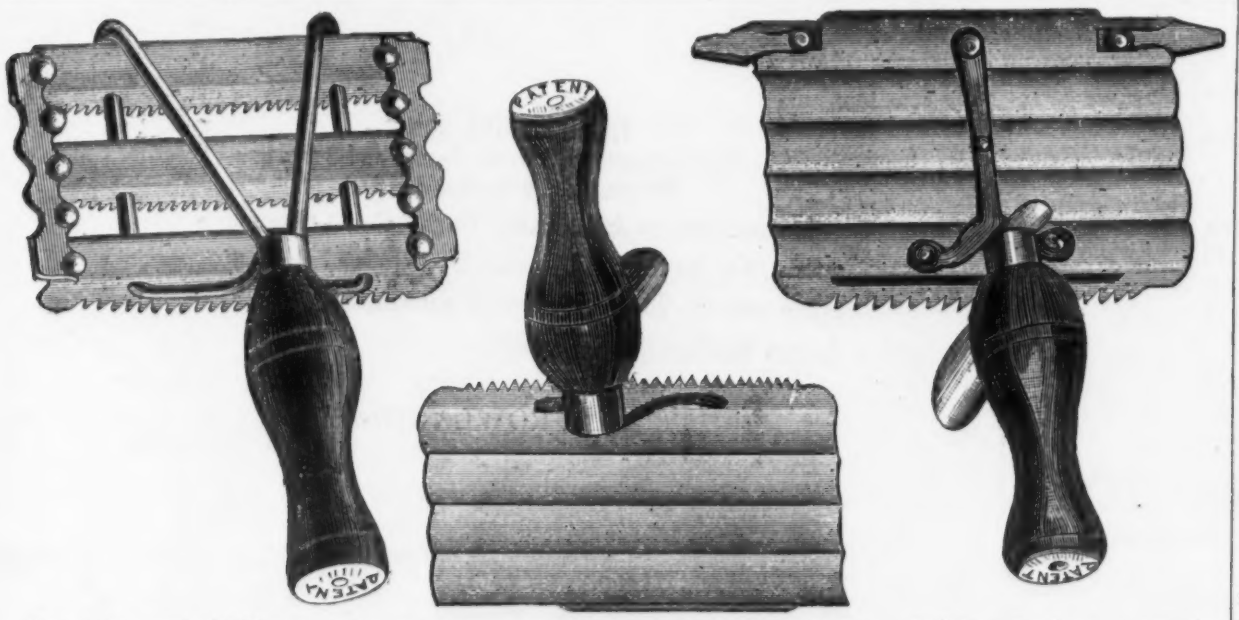


Our arrangement with Messrs. Graham & Haines as agents for our goods having expired, we shall hereafter have no agencies, but shall sell our own goods direct to the trade. We are confident it will be to your advantage to defer buying **any Combs** until you have inspected and priced our new lines,

"THE PIONEER,"

which we are manufacturing in connection with the "PERFECT," but which are not subject to the conditions governing the prices of the "PERFECT," and are universally acknowledged to be the best **low-priced** Combs ever offered to the trade.

Catalogues with Discounts, &c., sent on application.

LAWRENCE CURRY COMB CO.,

309 EAST 22d STREET, NEW YORK.

Morse Twist Drill and Machine Co.,

NEW BEDFORD, MASS, Sole Manufacturers of

Morse Patent Straight-Lip Increase Twist Drill,

Beach's Patent Self-Centering Chuck, Solid and Shell Reamers,

BIT STOCK DRILLS,

DRILLS FOR COES, WORCESTER, HUNTER AND OTHER HAND DRILL PRESSES. BEACH'S PATENT SELF-CENTERING CHUCKS, CENTER AND ADJUSTABLE DRILL CHUCKS, SOLID AND SHELL REAMERS. DRILL GRINDING MACHINES. TAPER REAMERS, MILLING CUTTERS AND SPECIAL TOOLS TO ORDER.

All Tools exact to Whitworth Standard Gauges.

GEO. R. STETSON, Supt. EDWARD S. TABER, Treas.

JOHN STARR,

Hardware & Metal Broker,

AND

MANUFACTURERS' AGENT,

Halifax, Nova Scotia,

Representing in the Dominion of Canada several American Manufacturers, is ready to accept further Agencies. Satisfactory references.

BARBER'S
PATENT
COUNTERSINK.

Diploma awarded at Mechanics' Fair, Boston, 1878. Hole bored any depth, and countersunk for any size screw at one operation. $2 per doz.; discount in quantity. Sample by mail 50 cts. D. F. BARBER, 1321 Washington St., Bos'n.

ANVILS & VISES.

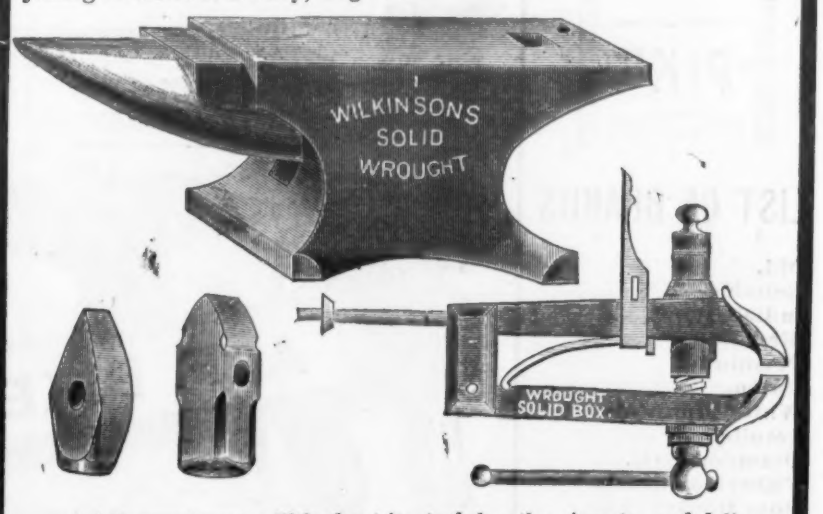
Joshua Wilkinson & Sons,

DUDLEY, ENGLAND.

Manufacturers of

Solid Wrought Steel Face Anvils,
Wrought Solid Box Vises,
Wrought Steel Face Hammers.

In quality and finish, and in the mode of manufacture, these goods are identical with "Wrights," being made by the same workmen in adjoining factories at Dudley, England.



A full assortment will be kept in stock by the Agents, and deliveries made in large lots f. o. b., at Liverpool, New York or Philadelphia. Small lots delivered from Warehouse at Philadelphia only.

NEWLIN & YARDLEY,

Sole Agents for the United States,

PHILADELPHIA.

Agents for "CROWN" Crane Chains, and "Best Prover" Chains of all sizes.

W. K. Ross,

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SCYTHES & SNATHS,

FORKS, HOES & RAKES

FOR EXPORT.

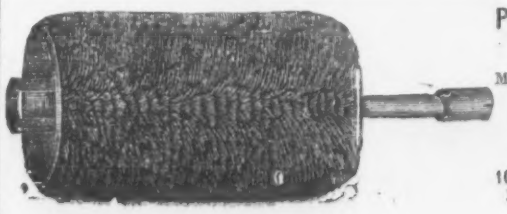
COLUMBIA BICYCLE.

The Bicycle, as a permanent, practical road vehicle, is an acknowledged fact, and the thousands in daily use are constantly increasing in numbers. It combines speed and endurance that no horse can equal, and for pleasure or health is far superior to any other out-door sport. The art of riding is easily acquired, and the exercise is recommended by the medical profession as a means of renewing health and strength, as it brings into action almost every muscle of the body. Send 3-cent stamp for 24-page Illustrated Catalogue, containing price lists and full information.

THE POPE MFG. CO.

No. 65 Summer Street,

BOSTON, MASS.



PATENT STEEL TUBE AND FLUE BRUSH.

Manufactured and for sale in the

L. B. Flanders Machine Works,

1025 Hamilton St., - - - PHILADELPHIA.

Descriptive circular on application

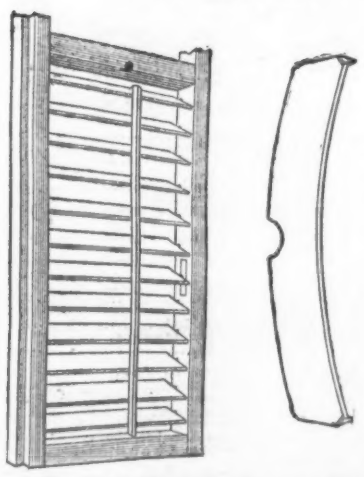
The Iron Age Directory

and Index to Advertisements.

BENTLEY'S
Perfect Blind Slat Holder.

Patented.

SUPERIOR TO ALL OTHERS.



For tightening the Slats of Window Blinds and holding them at any required angle.

The sunlight is let in or shut out at will.

The blinds are made a much better protection from cold, because when the slats are shut they are so kept by the Holder and cannot be moved by the action of the wind.

Noisy rattling of the slats is prevented.

The holder is securely held by its spring and the sharp points at each end.

As it is made of brass it will not rust.

It cannot get out of order.

Its superiority over other holders is evident.

It requires no screws or nails to fasten it to the blind. Any one can apply it.

It cannot get loose or deface the blind as others do.

Retail Price, 5 cents each; 50 cents per dozen;

At which price samples will be mailed postpaid.

Trade Price, $6 per gross; Discount 50 per cent.

FOR SALE BY THE TRADE.

In case your jobbing house cannot supply you, orders will be promptly filled by

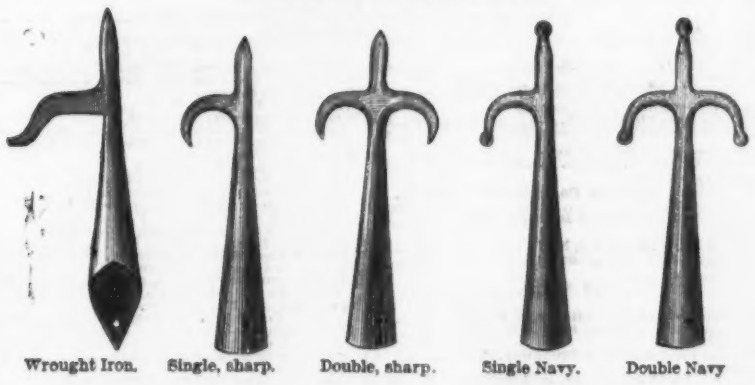
R. W. BENTLEY, Sole Manufacturer,

41 FOURTH ST., BROOKLYN, E. D., N. Y.

Providence Tool Co.,

PROVIDENCE, R. I.

Boat Hooks.



Wrought Iron. Single, sharp. Double, sharp. Single Navy. Double Navy

Prices furnished on application.

HENRY B. NEWHALL,

105 Chambers Street, - - New York Agent.

JOHN S. FRAY,

Successor to FRAY & PIGG, Bridgeport, Ct.

Spofford Bit Brace.

Spofford Sleeve Brace.

The Spofford Bit Brace is made under Letters Patent of the U. S. A., granted to N. Spofford, March 23, 1880, assigned to Fray & Pigg, and now held by John S. Fray, Mr. Pigg having retired from the firm.

All Iron, Five Sizes.		Cocoboio Head and Handle.			
No. 7	7 inch sweep.	No. 107	7 inch sweep.	No. 70	7 inch sweep.
No. 8	8 "	No. 108	8 "	No. 80	8 "
No. 10	10 "	No. 110	10 "	No. 100	10 "
No. 12	12 "	No. 112	12 "	No. 120	12 "
No. 14	14 "				

MARTIN'S ENGLISH HORSE CLIPPERS.

Special Prices for Quantities.

$30 Per Dozen.

Send for circular.

Sample Machines can be sent by mail at additional cost of 25 cents.

This Machine is acknowledged by practical clippers to be the best machine made. It is well made and easily worked, leaving the animal's skin smooth and equal to a summer's coat and full of gloss. Have written certificates to the fact, 200 horses having been clipped by a single machine. All Clippers of this make are stamped R. MARTIN IMPROVED, on lower plate and also on handles, as in cut.

J. J. SHANNON, 1707 Market St., Philadelphia.

U. N. Co.'s Nickel Solution

NEUTRAL.

Prepared and used *Free from Lime* &c., and any *Acid reaction.*

COMPONENT PARTS,

SULPHURIC ACID, NICKEL, AMMONIA.

Requires the addition of *Ammonia*, to maintain its *Neutrality.* It is use becoming *Acid.*

J. H. Potts' Nickel Solution

ACID.

Prepared and used *with Lime*, and an *Acid reaction.*

COMPONENT PARTS,

ACETIC ACID, NICKEL, LIME.

Requires the addition of *Acid* to maintain its *Acidity.* It in use becoming *Alkaline.*

Remove the words "Nickel" from the above and all *Similarity* of the Two Solutions disappears, both in *Preparation* and *Use.* Yours &c.

JOS. H. POTTS, 2638 Fairhill St., Philadelphia, Pa.

The "COLUMBUS"

SOLID STEEL SCRAPER,

MANUFACTURED ONLY BY

THE REVOLVING SCRAPER COMPANY,

Columbus, Ohio, U. S. A.

(Patented Nov. 4, 1879.)

The Perfect Scraper, made of a single sheet of steel, pressed into the best and most practical shape for working.

It is made with one continuous curve from the center up the sides and back, giving it greater strength and capacity than can be obtained in any other way.

It is without Joint or Seam, and there is not a sharp corner, angle, bolt, brace or stay-rod about the Scraper.

It will work in any kind of soil, whether plowed or not, and enters the ground as readily as a plow.

We guarantee it to fill easier and clean better than any other Scraper, and it will scour where no other Scraper will.

It is not injured by exposure to the weather, and there is nothing about it to get out of repair.

The new style Handles will commend themselves to every one, as they can, if broken, be easily replaced anywhere.

The entire bowl of the Scraper is made of one sheet of heavy steel, and is the only one so made. All other Scrapers represented as made of one sheet of steel have the old wood back, with sharp corners and stay-rods, bolts and braces, which are constantly getting out of repair.

It is the LIGHTEST, STRONGEST and most DURABLE, and will displace all others wherever it is known.

We make three sizes of this Scraper. Capacity, No. 1, 7 feet; No. 2, 5 feet; No. 3, 3 feet.

Furnished with chain or bail, as preferred, and with steel-laid runners when specially ordered.

We also manufacture the well-known

Doty's Automatic Revolving Scrapers,

AND A FULL LINE OF

WHEELBARROWS, ROAD PLOWS, &c.

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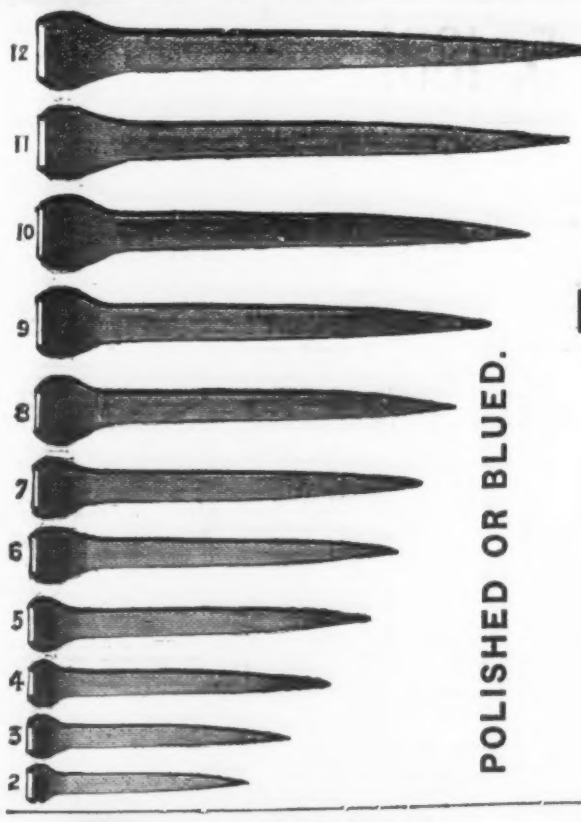

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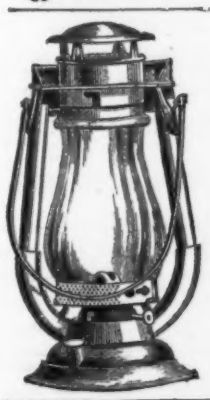

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Adapted to Wood Track.

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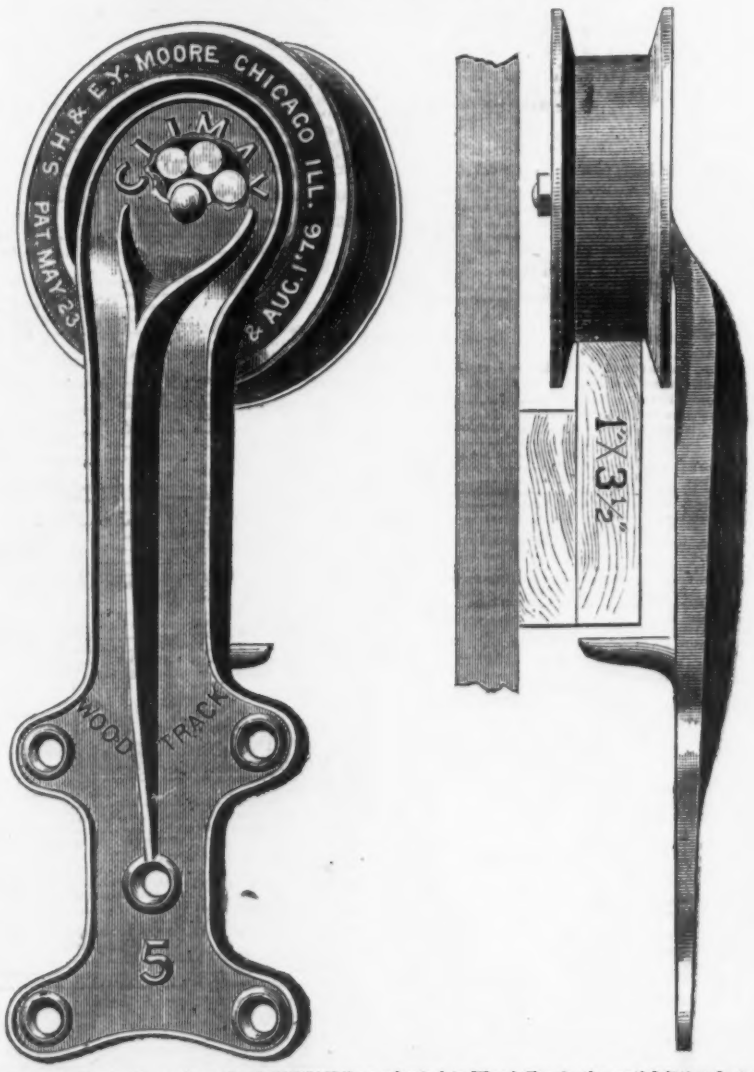

The above illustrations show the "CLIMAX" as adapted to Wood Track, the anti-friction feature being retained. The hub of the wheel and the inside of the cup are turned true, that the parts may all work smoothly and easily. There is no wear on a center pin. This style of the "CLIMAX" Hanger is not gotten out to supersede the iron track Climax, but to give the trade a first-class Hanger to meet the demand that has arisen for one to run on a wooden track. This Hanger cannot jump the track.

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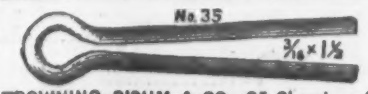

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New York Wholesale Prices, January 5, 1881.

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Trenton....10½c

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Augers and Bits.
Conn. Valley Mfg. Co. / Douglass Mfg. Co. / Humphreysville Mfg. Co. / Ives / Beecher (French, Swift & Co) / Griswold / Nobles Mfg. Co. / Kasson's Patent } dis 40 % from list of Jan 7, 1880
Cook's, Douglass Mfg. Co....dis 40&10 %
Snell Mfg. Co.'s C. S. Augers....dis 40 %
" " B. Machine....dis 40 %
" " C. S. Bits....dis 40 %
" " Jenning's Bits....dis 35 %
Patent Solid Head....dis 30 %
Lewis' Patent Single Twist....dis 33⅓ %
Russell Jennings' Auger, Dowel, Machine-Dowel and Hand-Rail Bits....dis 10&10&10 %
Russell Jennings' Augers....dis 16⅔&10&10&10 %
Russell Jennings' Car and Machine Bits, Boring-Machine and Millwrights' Augers dis 25&10&10&10 %
Imitation Jenning's Bits....dis 40@45 %
Ives' "Jennings" Bits....dis 33⅓&10 %
Andrews Bits....dis 40 %
Expansive Bits, Clark's, small, $18; l'ge. $26....dis 25 %
" " Ives....$20 @ $30—dis 33⅓ %
" " Blake's....$20—dis 40 %
" " Parmelee's....$20 and $30 .dis 33⅓ %
Hollow Augers Ives' / " " French, Swift & Co } dis 15 %
" " Douglas....dis 15 %
" " Bonney's Adjust....⅌ doz $48—dis 25&10 %
" " Stearns' Adjust.. ⅌ doz $48—dis 20&10 %
" " Ives' Expansive....each $4.50—dis 30 %
" " Univ'sal Expansive, each $4.50—dis 20 %
Woods....dis 25 %
Gimlet Bits....$7.50 ⅌ gross, dis 45 %
" Diamond....⅌ doz $1.10 dis 20&10 %
" "Bee"....dis 35&5 %
Double Cut Gimlet Bits Shepardson's....dis 40 %
" " Ct. Valley Mfg. Co...dis 30&10 %
" " Hartwell's....dis 60&10 %
" " Douglass'....dis 40 %
" " Ives'....dis 50 %
Morse's Bit Stock Drill....dis 25 %
L'Hommedieu's Ship Augers....dis 15 %
Watrous Ship Augers....dis 15 %
" Extension Lip....dis 30 %

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Sewing Brass Ferrule....$3.50 ⅌ gross—dis 40&10 %
" " ....3.50 " dis 40&10 %
Patent Sewing, Short....$1.00 ⅌ doz—dis 40&10 %
" " Long....$1.40 ⅌ doz—dis 10 %
Patent Peg Plain Top....$10.00 ⅌ gross—dis 40&10 %
" " Leather Top....12.00 " dis 40&10 %

Awls, Brad Sets, &c.
Awls, Sewing, Common....⅌ gross $1.70—dis 25&10 %
" Shouldered Peg....⅌ gross 2.45—dis 25&10 %
" Patent Peg....⅌ gross .63—dis 25&10 %
" Shouldered Brad....⅌ gross $2.70—dis 25&10 %
" Handled Brad....$7.00 ⅌ gross—dis 20&10 %
" Handled Scratch....$7.00 ⅌ gross—dis 20&10 %
" Socket Scratch....$1.00@$1.25 ⅌ doz—net
Brad Sets, Aiken's....⅌ doz $17.00—dis 45&10 %
" No. 42, $10.50; No. 43, $12.50....dis 70 %
" Stanley's Excelsior, No. 1, $9.60...dis 20&10 %
" " " No. 2, 4.80...dis 20&10 %
" " " No. 3, 7.80...dis 20&10 %

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Single Bit, 4½ to 5½ and under....⅌ doz $11.00 net
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" Beveled....50 c ⅌ doz advance
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" Beveled....$1.00 ⅌ doz advance

Axle Grease.—Frazer's....⅌ ℔ 6c

Bag Holders.
Sprengle's Patent, per doz. $18....dis 40 %

Balances.
All Spring Balances....dis 15&10 %

Bells.
Hand, Light Brass....dis. 60&10 %
" Extra Heavy....dis 45 %
" White Metal....dis 60 %
" Silver Chime....dis 20&10 %
" Globe (Cone's Patent)....dis 25&10 %
Gong, Abbe's....dis 45&10 %
" Yankee....dis 30&10 %
" Barton's....dis 30&10 %
Crank Taylor's....dis 25&10 %
" Brook's....dis 50&10&2 %
" Cone's....dis 10 %
" Connel's....dis 35 %
Lever, Sargent's....dis 60&10 %
" Taylor's Bronze or Plated Lever....net
" Japanned Lever....dis 25&10 %
" R. & E. M. Co.'s....dis 50&10&2 %
Pull, Brook's....dis 50&10&2 %
" Western....dis 25&10 %
Call....dis 25 %
Cow, Common Wrought....dis 40&10&10 %
" Western....dis 20&10 %
" Sargent's new list....dis 40&10&10 %
" Kentucky "Star"....dis 20&10 %
" Sargent's new list....dis 40&10&10 %
" Dodge's Genuine Kentucky, new list—
Nos. 0 1 1½ 2 3 4 5 6 Hog } dis 50 %
$12.00 10.00 9.00 8.00 6.00 5.00 3.50 2.50 5.00
Texas....dis 30&10

Bellows.
Blacksmiths', Common....dis 45 %
" Extra and Pittsburgh Pattern....dis 20 %
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Hand Bellows....List of Dec. 1, 1870, net

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N. Y. Belting and Packing Co....new list net

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Ives' Pat. Door Bolts....dis 50 %
Wrought Barrel....dis 55&10 %
" Square....dis 55&10 %
" Shutter, all iron, Stanley's list....dis 50&10 %
" " Brass Knob, " " ....dis 20&10 %
" " Sargent's list....dis 55&10 %
" Sunk Flush, Sargent's....dis 66⅔&10 %
" " Stanley's....dis 40&7½ %
" B. K. Flush, Com'n. Stanley's....dis 50&6 %
" " " Ex. Heavy....dis 40&10 %
" Plated Knob & Slide Flush....dis 50&2½ %
Carriage and Tire, Common....dis 70 @ 70&10 %
" " Philadelphia, new list....dis 55 %
" " Philada. Pattern....dis 70 %
" " Shelton's....(old list) dis 60&10 %
R. B. & W. Carriage (old list)....dis 65 %
Tire, Am. Screw Co.'s, Phila, new list, Nov 1, '79.
dis 70&10 %
" "Bay State"....dis 60&5 %
" R. B. & W., new list....dis 60 %
Stove—American Screw Co.'s....dis 40 %
" R. B. & W....dis 40 %
Plow....dis 45 %
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Amidon's....dis 50 %
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Empire....dis 30 %
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Cast Brass, Tiebout's....dis 30 %
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Fast Joint, Narrow....dis
" Broad....dis
Loose Joint....dis
" Japanned....dis
" with Acorns....dis
" Japanned, with acorns....dis
Parliament Butts....dis
Mayer's Hinges....dis
Loose Pin no Acorn....dis
" Acorns....dis
" Japanned....dis
" Plated Tips....dis

WROUGHT IRON.
Fast Joint Narrow....dis 45&10 %
Lt. Narrow....dis 45&10 %
Broad....dis 45&10 %
Loose Joint, Broad....dis 55&10 %
Table Butts, Back Flaps, &c....dis 45&10 %
Inside Blind, Regular....dis 45&10 %
" Light....dis 45&10 %
Loose Pin, Wrt....dis 55&10 %
Spring Hinges:
American Spiral Spring Butt Co., Jap'd....dis 25 %
" " " " Fancy....dis 20 %
Gem Spiral Spring Butts, Japanned....dis 25 %
" " " " Ornamental....dis 20 %
Geer's Spring and Blank Butts....dis 25 %
Sabin Mfg. Co.'s Double Acting....dis 35 %
Union Spiral Spring, Japanned....dis 25 %
" " Ornamental....dis 20 %
Union Spring Hinge Co.'s....dis 25 %
American Spring Hinge Co.'s....dis 25 %
Union Mfg. Co....dis 25 %
Bommer's....dis 25 %
Blind Butts, Parker....dis 70 %
Palmer....dis 35&10 %
Seymour....dis 60&10 %
" Shepard's "Double Locking" Nos. 1 & 2....dis 60&10&10 %
Shepard's "Noiseless," Nos. 50 & 60....dis 60&10&10 %
" Lull & Porter....dis 60&10 %
" Nicholson....dis 45&10 %
" Huffer....dis 50 %
" Clark's, Nos. 1, 3, 5....dis 60&10&10 %
" Sargent's No. 12....dis 70&10 %

Bow Pins.
Hotchkiss'....low list net
Humason, Beckley & Co.'s....dis 60 %
Sargent & Co's....$19.70 and $21.40, dis 60&10 %

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Humason & Beckley Mfg. Co....dis 20 %
Bradley's....dis 25 %
Beatty's....dis 25&5 %
1 2 3 4 5 6 7 8
$16.50 19.00 21.50 24.00 27.00 30.00 33.50 36.50

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American....⅌ gross $7.50, dis 10 %
Duplex....⅌ doz 25c, dis 15@20 %
Lyman's....⅌ doz $3.75, dis 20 %
No. 4, French....⅌ doz $2.25, dis 55 %
No. 5, Iron Handle....⅌ gross $7.50 dis 10 %
Eureka....⅌ doz $2.50, dis 10 %
Sardine Scissors....⅌ doz $7.00, dis 55 %
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Caps—Percussion, ⅌ 1000.
U. M. C., F. C. trimmed....50c } dis
" F. L ground....70c } 10&5 %
U. M. C. Cen. fire ground....70c } dis
" Double W. proof....$1.40 } 10&5 %
G. D. & S. B....36c, dis 7½ %
Double Waterproof, in 1-10's....$1.40 } dis
Colt's Pistol, "....70c } 10&5 %
F. L....50c } dis 10&5 %
E. B. 1-10, Trimmed....65c
E. B. 1-10 Ground Edge....70c }
Musket, in 1-10's....75c net

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Central Fire....dis 20 %

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Cotton....dis 10 %
Wool....dis 10 %

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Cast Steel, Polished....⅌ doz $5.00, dis 30
" Iron Steel Points....⅌ doz $2.00, dis 35 %
Bullard's....dis 25 %

Casters.
Bed....new list July, '80, dis 40 %
Plate and Shallow .. Socket " dis 40 %
Deep Socket " " dis 25&10 %

Cattle Leaders.
Humason, Beckley & Co.'s....dis 65&10 %
Sargent's....dis 65&10 %

Chain.
Trace, 6½-1-2....⅌ pair 70c }
" 6½-10-3....⅌ pair 70c } dis 40 %
" 7-10-2....⅌ pair 80c }
German Halter Chain, New list Oct. 22, '79....dis 50 %
" Coil, New list Oct. 22, '79....dis 50 %
Covert Halter, Hitching and Breast....dis 35%
Oneida Halter Chain....dis 33⅓ %
Galvanized Pump Chain....⅌ ℔ 10c net
Jack Chain, Iron....dis 45 %
" Brass....dis 20&10 %

Chalk.
White....⅌ gross 60c net
Red....⅌ gross 80c net
Blue....⅌ gross 100c net
White Crayons....⅌ gross 10c net

Chisels.
Socket Framing, Crossman....dis 65&5 %
" Arlington Edge Tool Co...dis 65&10 %
" Buck Bros....new list, dis 22½ %
" Merrill....dis 65&10 %
" Witherby Tool Co....dis 65&10 %
" Douglass'....dis 65&10 %
Firmers, Crossman....dis 65&5 %
" Arlington Edge Tool Co...dis 65&10 %
" Buck Bros....new list, dis 22½ %
" Merrill....dis 65&10 %
" Witherby Tool Co....dis 65&10 %
" Douglass'....dis 65&10 %
Corner....dis 65&10 %
Tanged Firmers extra....dis 33⅓ @ 40 %
" Butcher's....$5.00 @ 5.25 to £
" Spear & Jackson's....5.00 to £
" Buck Bros. (Shank)....5.25

Clamps.
Iron, Providence Tool Co.'s, Wrt. Iron....dis 25 %
" Adjustable, Gray's....dis 20 %
" Lambert's....dis 20 %
" Snow's....dis 40&5 %
" Hammer's....dis 15 %
" Stearns'....dis 15&10 %
Cabinet, Sargent's....dis 65&10 %
Carriage Makers', Sargent's....dis 65&10 %
Cord and Tape (T. & S. Mfg. Co.)....dis 30 %

Clips, Axle.
Norway or Best....dis 40&10%
Superior....dis 45&10 %

Coal Hods.
Griffiths....dis 33⅓ %

Cockeyes....dis 25 %

Cocks, Brass.
Racking....new list, July 10, '80 }
Globe.... " " }
Plain Bibbs.... " " } ....dis 40 %
Ale and Beer.... " " }

Coffee Mills.
Board and Box....new list, Jan., 1880, dis 35 %
Increase Wilson's....net
Selsor's Pat....$9.50, $10.50, dis 25 %
American (Enterprise Mfg. Co.)....dis 20 %
French Steel....dis 25%
The Swift (Lane Bros.)....dis 0 %

Combined Dinner Pail and Lantern.
Per doz $15.00....dis 30 %

Compasses, Dividers, &c.
Compasses....dis 55 %
Callipers....dis 55 %
Dividers....dis 55 %
Bemis & Call Co.'s Dividers....dis 60&5 %
" " Compasses & Callipers....dis 50&5 %
" " Wing & Inside or Outside.dis 50&5 %
" " Double....dis 60 %
" " Call's Pat. Inside....dis 30 %
Cook's....dis 25 %
Excelsior....dis 50 %
Miller's Patent....dis 25 %

Coopers' Tools.
Bradley's....dis 15 @ 20 %

Corkscrews.—Humason & B....dis 33⅓ %
Clough's Wire....dis 25 %

Corn Knives and Cutters.—Bradley's..dis 10 %
Wadsworth's....dis 33⅓ %

Crow Bars.
Cast Steel....⅌ ℔ 8¼c
Iron, Steel Points....⅌ ℔ 6¼c

Curling Irons, &c.
¼, ⅜, ⅝ in., $1.80 2.00, 2.40....dis 10 %
Curling Tongs....⅌ doz $3.65, dis 10 %
Pinching Irons....⅌ doz 7.50, dis 20 %

Curry Combs.
Fitch's new list....dis 45 @ 50 %
Hotchkiss' Novelty....new list, July, 1880, dis 25 %
" Excir. Supr. Champion....dis 25 %
Lawrence....new list, July 1880 dis 25 %
Lawrence, with detachable Mane Comb new list July 1880, dis 25 %
Rubber....⅌ doz $10.00, dis 15 %

Curtain Pins.—Silvered Glass....net
White Enamel....net

Cutlery.
Meriden Cutlery Co. (Table)....net
Am. Miller Bro.'s Cutlery Co....dis 25 %
Humason & Beckley, Pocket....dis 33⅓ %
The Wm. Rogers Mfg. Co....net
Naugatuck Cutlery Co....list net
Aaron Burkinshaw's Pocket....dis 25 %

Dog Collars.
Embossed Gilt....dis 20 %
Leather....dis 30 %
Brass....dis 25 %

Door Springs.
Torrey's Rod....⅌ doz $2.10, dis 10 %
Gray's "....⅌ doz $1.70, net
Pee Rod....⅌ doz $1.70, net
Warner's....dis 15&10 %
Gem (Coil)—
No. 1, Large, Japanned....⅌ doz $3.50 }
No. 2, Medium, ...⅌ doz 2.50 } dis 10 %
No. 3, Small....⅌ doz 2.00 }
Challenge (Coil)— Nos. 9 7 6
Japanned....⅌ doz $2.00 2.50 3.50 }
Coppered....⅌ doz 4.00 4.50 5.00 }
Galvanized....⅌ doz 3.50 4.00 4.50 } dis 10 %
Nickeled....⅌ doz 5.50 6.00 7.00 }
Star (Coil)—For Cop'd, Nickel-Plated, &c. see list.
No. 4, ("Snoo Fly") Screen door size ⅌ doz $1.80 }
No. 5, Screen Door Size....⅌ doz $2.00 }
No. 6, Medium....⅌ doz 2.50 } dis 20 %
No. 7, Large....⅌ doz 3.50 }
Sabin's Lever..No. 1, $1; 2, $1.50; 3, $2; 4, $2.50; dis 30 %
Sabin's Boss....No. 1, $5.40; 2, $4.20; 3, $3.00.dis 50 %
Sabin's Crown....⅌ doz $2.75, dis 50 %
Philadelphia....5 in., $5.00; 8 in., $7.00, dis 35 %
Barker's Concealed....dis 20 %
Cowell's....No. 1, $18.00; No. 2, $15.00 ⅌ doz, dis 50 %
Rubber, complete....⅌ doz $1.80, dis 10 %
Hercules....dis 40 %

Drawing Knives.
Arlington Edge Tool Co....dis 65&10 %
Crossman's No. 1....dis 65&5 %
Merrill....dis 65&10 %
Nobles Mfg. Co....dis 15 %
Bradley's....dis 35 %
Adjustable Handle....dis 20 %
Witherby Tool Co....dis 65&10 %
Douglass....dis 65&10 %

Drills and Drill Stocks.
Blacksmiths'....each $2 70 net
Blacksmiths Self Feeding....each $7.50, dis 20 %
Breast P. S & W....dis 20&10 %
" Hotchkiss....dis 20 %
Breast, Wilson's....dis 20 %
" Miller's Falls....each $3.00, dis 25 %
" Bartholomew's....each, $2.50 dis 25&10 %
Ratchet, Merrill's....dis 10 %
" Ingersoll's....dis 25 %
" Whitney's....dis 20 %
" Weston's....dis 20 %
" Moore's Triple Action....dis 20 @ 25 %
Whitney's Hand Drill....dis 50 %
Wilson's Drill Stocks....dis 10 %
Automatic Boring Tools....each $2.25, dis 20 %

Drill Chucks.—Beach Patent....dis 30 %
" Adjust..each $10.00, dis 30 %
Danbury....$8.00, dis 30 %

Egg Beaters.
Dover....⅌ doz. $2.50 net
National....⅌ doz $4.50, dis 33⅓ %
Family....per gross $15; per doz., $1.50 net

Elevator Buckets.
Mill E. Buckets, light, 3½ to 10 in. (Duc's Improved)
⅌ 100 $15.00 @ $54.00, net
Mill E. Buckets, heavy, 5 to 10 inches (Duc's Improved)
⅌ doz $5.60 @ $10.20 net
Storehouse, Duc's Patent) 12 to 17, $12.00 @ $20.00...net

Emery and Emery Paper.
Genuine Chester—Regular Nos....⅌ ℔
" " Flour and FF....⅌ ℔
" " in 10-lb. cans....2c extra
Washington Mills—Regular Nos....⅌ ℔ 8c
" Flour....⅌ ℔ 5c
Excelsior Mills, Regular Nos., Grain in kegs....⅌ ℔ 6c
" " " Flour and FF "....⅌ ℔ 4c
" " 10-lb. cans....⅌ ℔ 9c
Wellington Mills, Grain....⅌ ℔ 10c net
" " Flour....⅌ ℔ 8c net
Hampden Emery Grain....5c net
" Flour....9c net
B. & A. Emery Paper....dis 20@25 %

Enameled and Tinned Ware.
Kettles....45 %
Sauce Pans....dis 30 %
Tinned Sauce Pans....dis 30

Escutcheon Pins.
Iron....dis 20 %
Brass....dis 45 %

Escutcheons.
Door Lock....Same discounts as Door Locks
Brass Thread....dis 55 %
Wood....dis 25 %

Faucets.
Fenn's....dis 40 %
Fenn's Cork Stops....dis 33⅓ %
Star....dis 55&10 %
Frary's Patent Petroleum....dis 20&10 %
Wood and Metallic....dis 40 %
West's Patent Key....dis 45 %
Metallic Key, Leather Lined....dis 50 %
Cork Lined....dis 70 %
Enterprise (Self Measuring)....⅌ doz, $36.00, dis 25 %

Felloe Plates....⅌ ℔ 10c, dis 10 %

Files.
Auburn....$5.00 to £, dis 35 %
Arcade....$5.00 to £, dis 20 %
Black Diamond, new list....dis 30 %
E. M. Boynton's....new list, dis 25 %
Nicholson....(Nicholson List) dis 30@35 %
Madden & Cockayne File Co....dis 20 %
Heller & Bros (new list)....dis 15@20 %
Hiscox File Mfg. Co., new list....dis 20 %
J. & Riley Carr....4.50 to £
Johnson & Bro....dis 30 %
Butcher's....4.50 to £
Walter Spencer & Co.'s "Diamond"....4.50 to £
Fisher's....4.75 to £
Moss & Gamble....4.50 to £
H. Disston & Sons (new list)....dis 40 %
Western (new list)....dis 20%
Limet & Co. (French)....$4.25 to £
Union File Works (new list)....dis 30 %

Fluting Machines.
Knox, 4-inch Rolls....$3.25 each }
" 6 " "....4.00 " } dis 10 %
" 8 " "....6.50 " }
Peerless, 4-inch Rolls....4.00 each net
" 5 " "....4.75 each net
Eagle, 3½-inch Roll....$2.15, dis 10 %
" 5½ " "....$2.85, dis 10 %
Eureka, No. 1, 7-inch Roll....6.00 each, dis 10 %
" No. 2 5-inch Roll....4.00 each, dis 10 %
Crown..4½-in. $3.50; 6-in..$4.00; 8-in. $6.50 each dis 10 %
Star....4½ in.. $4.00; 6 in..$5.00 each dis 10
Crown Jewel....6 in., $3.40 each. dis 10 %
American, 5 in., $3; 6 in., $3.40; 7 in., $4.50 each, dis 10 %
Domestic Fluter....1.50 each net
Geneva Hand Fluter, No. 1....⅌ doz $15, dis 20 %
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00 ⅌ doz....dis 10 %
Shepard Hand Fluter....No. 75 ⅌ doz $15, dis 10 %
" " " No. 90, $9.00; No. 110, $7.25;
" " " No. 100, $6.00 ⅌ doz....net
Clark's Hand Fluter....⅌ doz $15.00, dis 20 %
Combined Fluter and Sad Iron....⅌ doz 15.00, dis 30 %
Buffalo....⅌ doz 10.00, dis 10 %

Fluting Scissors....dis 45 %

Forks.
Hay, Manure and Spading....dis 50 %
Plated "A 1, Rogers & Bro....dis 33⅓&5 %
" Reed & Barton....dis 33⅓&5 %

Fruit and Jelly Presses.
Enterprise Mfg. Co....dis 25 %
American....dis 20 %

Fry Pans.
Burnished, list as follows....dis 60 %
No....0 1 2 3 4 5 6 7 8
⅌ doz....$3.00 $3.75 4.25 4.75 5.25 6.00 7.00 8.00 9.00
"Acme"....dis 45 %

Gauges.
Marking, Stanley's....dis 45&10 %
" Chapin's....dis 50&10 %
Wire....dis 10 %
" Smith's Patent....⅌ doz $18.00, dis 40 %

Gimlets.
Nail and Spike....dis 45 %
"Bee" Gimlets....⅌ gross $12.00 dis 60&10 %
"Eureka Gimlets....dis 50 %
"Diamond Gimlets....dis 40 %
Double Cut Shepardson's....dis 40 %
" " Hartwell's....dis 50 %
" " Ives'....dis 50 %
" " Douglass'....dis 40%

Glue Pots.
Tinned and Enameled....dis 25 %
Family, Howe's "Eureka"....dis 40 %
" L. F. & C.'s "Handy....dis 40 %

Grindstone Fixtures.
Sargent's Patent....dis 70&10 %
Reading Hardware Co., new list....dis 25&10 %
" " 'Keystone"....dis 25&10 %

Gun Wads.
U. M. C. B. E. 11 up....$2.00 }
" " 9 & 10....2.30 }
" " 7 & 8....2.60 } dis 5&5 %
" P. E. 11 up....3.10 }
" " 9 & 11....4.00 }
" " 7 &....4.90 }

Halters.
Covert's Pat. Rope....dis 50 %
Horse and Cattle Ties, Covert's....dis 50 %

Hammers.
Maydole's....dis 15 %
Cheney's....dis 25 %
R. Hammonds (new list July 20, '80)....dis 20 %
Humason & Beckley....dis 50 %
Verree....dis 5 %
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 and 1.75.dis 20&10 %
Warner & Noble's....dis 10 %
Kip's....dis 20 %
Yerkes & Plumb....dis 15 %

Hand Cuffs and Leg Irons.
Providence Tool Co.'s Hand Cuffs, $15.00 ⅌ doz }
" " Leg Irons, $25 ⅌ doz } dis 10 %
Tower's....dis 25 %

Handles.—Door or Thumb Latches—
Nos....0 1 2 3 4
Per doz....$0.80 1.00 1.18 1.35 1.50....dis 55&10 %
Roggin's Latches....per doz 35c@40c net
Bronzed Iron Drop Latches..⅌ doz $0.90 @ 1.15 dis 10 %
Jap'd Store Door Handles—Nuts, $2.00; Plate $1.35 no Plate, $1.08....dis 10 %
Barn Door....per doz $1.80, dis 10 %
Wrought Chest....dis 60&10 %
Surface Chest, Sargent's list....dis 60&10 %
Flush Chest....dis 60&10 %
Lifting....dis 55&10 %
Saw and Plane....dis 40&10 %
Boynton's Pat. Loop Saw Handles....dis 25 %
" Centennial Saw Handles....dis 25 %
Hammer and Hatchet....dis 20 %
Brad Awl....⅌ gross $2.00, dis 20&10 %
Hickory Firmer Chisel, assorted, ⅌ gross $4.50 }
" " " large, " 5.00 }
Apple " " assorted, " 5.00 }
" " " large, " 6.00 }
Socket " " assorted, " 3.00 } dis
" Framing " assorted, " 5.00 } 20&10 %
File, assorted, ⅌ gross....2.75 }
Auger, assorted, ⅌ gross....0.00 }
" large, "....7.00 }
Patent Auger, Ives'....dis 25
" Douglass'....⅌ set $1.25, net
" Swan's....⅌ set $1, net

Hangers.
Barn Door, old patterns....dis 50&10 %
" New England....dis 60&10 %
Novelty....dis 40 %
Challenge....dis 50 %
Climax (Anti-Friction)....dis 50 %
Sterling Improved (Anti-Friction)....dis 60&10 %
Cheritree....dis 50 %
Kidder's....dis 40 %

Harness Snaps.
Henshaw's...List of 1½ changed to 14 00, dis 50&10 %
Judd's.... " " " 14.00, dis 50&10 %
Fitch's (Bristol) " " 14.00, dis 50&10 %
Great Western....dis 50&10 %
Hotchkiss'....dis 10 %
Andrews'....dis 50 %
Sargent's....dis 60&10 %
"German....dis 60&5 %
Covert....dis 40 %
Covered Spring....dis 50&10 %

Hatchets.
Isaiah Blood....dis 15
Shingling, Nos. 1 2 3....⅌ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3....⅌ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3....⅌ doz 7.50 8.00 8.50
Hunt's....dis 15&5 %
Shingling, Nos. 1 2 3....⅌ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3....⅌ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3....⅌ doz 7.50 8.25 9.00
Hurd's....dis 33⅓
Shingling, Nos. 1 2 3....⅌ doz $8.00 $8.50 $9.00
Claw, Nos. 1 2 3....⅌ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3....⅌ doz 8.00 .50 9.00
Yerkes & Plumb....dis 30
Shingling, Nos. 1 2 3....⅌ doz $7.55 $8.00 $8.50 %
Claw, Nos. 1 2 3....⅌ doz 8.25 8.75 9.25
Lathing Nos....⅌ doz 7.50 8.00 8.50
Simmons's....dis 20
Shingling, Nos. 0 1 2 3....⅌ doz $7.50 $8.00 $8.50 $9.00
Claw, Nos. 1 2 3....⅌ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3....⅌ doz 8.00 8.50 9.00
Broad, Nos. 1 2 3 4....⅌ doz 9.00 10.00 12.00 14.00 %
" Nos. 5 6 7 8....⅌ doz 16.00 18.00 20.00 22.00
Collins....dis 10
Shingling, Nos. 1 2 3....⅌ doz $6.00 $6.50 $7.00
Claw Nos. 1 2 3....⅌ doz 6.50 7.00 7.50
Lathing, Nos. 1 2 3....⅌ doz 6.00 6.50 7.00

Hay Knives.
"Lightning"....⅌ doz $20.00 net
Wadsworth's....dis 33⅓

Hinges.
Gate, Western....⅌ doz $6.25, dis 60 %
" N. E....⅌ doz $10.13, dis 60&5 %
" N. E. Reversible....⅌ doz $6.50, dis 60 %
Gate, Clark's No. 1....⅌ doz $0.00, dis 50 %
" N. Y. State....⅌ doz $0.50, dis 6[illegible] %
" Automatic....⅌ doz $12.50 dis 40 %
" Common Sense....dis 10 %
" Seymour's....dis 40&10 %
" Shepard's....Nos. 10, 20 & 25, dis 50 %
Rolled Blind Hinges....dis 60&10 %
Rolled Plate....dis 60&10 %
Rolled Raised....dis 60&10 %
Wrought Strap and T, list Dec. 20, '77....dis 50&10 %
Plate Hinges { 8, 10 & 12 in. $6.50 ⅌ 100 ℔ }
"Providence" { over 12 in. $5.50 ⅌ 100 ℔ } dis 10 %
Screw Hook and { 8, 10, 12 in., $6.75 ⅌ 100 ℔ }
Strap { 14 to 36 in., $5.50 ⅌ 100 ℔ } dis 10 %
Heavy Welded Hook { 8 to 12 in., $0.75 ⅌ 100 ℔ } { 14 in. & up, 5.50 ⅌ 100 ℔ } dis 10 %
Screw Hook and Eye { ¼ & 1 in., 90 / ⅜ in. 90 / ½ in. 100 / ⅝ in. 120 } dis 20 %

Hoes.—Riveted Shank....per doz, $5.00; dis 35 %
Socket....⅌ doz $5.25, dis 35 %
Grub....dis 15 %
Planters'....dis 35 %
Scovill Pattern....dis 20&10 %
Scovill Pattern, Handled....dis 25 %
Hick's Pat. Solid C. S. Planters'....dis 20&10 @ 30 %
" " " Scovill Pattern dis 20&5 @ 35 %
Winsted & Lane, Planters....dis 25 %
" " Scovill Pattern....dis 20@25 %

Hooks.
Bird Cage, Sargent's list....dis 60&10 %
Cotton....dis 50 %
Cott on, Patented (N. Y. Mallet & Handle Wks), dis 30
Cotton (Humason & Beckley Mfg. Co.)....dis 40 %
Belt, (new list Dec. 24, 1870.)....dis 60&10 %
Bench—Hotchkiss', $5 00 ⅌ doz....dis 10 %
" Weston's, No. 1, $10.00; No. 2, $9.00 ⅌ doz dis 25 %
" McGill's, $3.00 ⅌ doz....dis 20 %
" Skinner's, $6.25 per doz....dis 20 %
Clothes Line Sargent's list....dis 60&10 %
" " Reading list....dis 33⅓&10 %
Ceiling.. } Sargent's list....dis 60&10 %
Harness. } Reading list....dis 20&10 %
Coat and Hat, Sargent's list....dis 60&10&10 %
" " Reading....dis 33⅓&10 %
Picture Hooks, Brown's Pat. Solid Brass, $4 per gross....dis 25 %
Tassel (T. & S. Mfg. Co.)....dis 40 %
Wrought Staples and Hooks and Staples, dis 65&10&10 %
" Staples, Stanley's list....dis 65&10 %
Wire Screw Hooks and Eyes, new list....dis 60&10 %
Grass and Bush....dis 40@45 %
Whiffletree—Patent....dis 40 %
Hooks and Eyes—Malleable Iron....dis 60&10 %
" Brass....dis 60&10 %

Horse Nails.
Nos. 5 6 7 8 9 10
Ausable....⅌ ℔ 30c 27c 25c 24c 23c 22c } dis 20 %
" Finished, Polished or Blued... " 31c 28c 26c 25c 24c 23c }
A. C....60 50 40 30 27 25 23 22 21 21 20 20c } dis 15 %
Nos....1 2 3 4 5 6 7 8 9 10 11 12 }
Nos. 5 6 7 8 9 10
H. P. Pointed and Finished....26 23 21 20 19 18 } dis 20 %
National, Pointed....26 23 21 20 19 18 dis 25 %

Horse Shoes.—Burden....⅌ keg $4.37½
R. I. Horse Shoe Co., Perkins' Improved Light, Medium and Heavy....⅌ keg 4.37½
Mule Shoes....⅌ keg 5.37½

Ice Awls, Chisels, &c.
American Ice Chisel....⅌ doz. $3.50 net
National "....⅌ doz $0.25 dis 20 %
Novelty Ice Breakers....⅌ doz $6.25 dis 20 %
White's Sliding Head Picks....⅌ doz $2.50 dis 40 %
Dunlap's Ring Picks....⅌ doz [illegible] dis 40&10 %
Wood Head Picks, Sargent's ⅌ doz $1.85, dis 60&10&10 %
Iron " ⅌ doz 1.85, dis 60&10&10 %
Ice Mallets Pick in Head....⅌ doz 1.75 net
" Pick in Handle....⅌ doz 3.00 net
Ice Axes, Small, Cast or Malleable....⅌ doz 1.20 net
Kitchen Ice Tongs....⅌ doz 2.25 net
Combination Ice Tools....⅌ doz $2 00 net

Kettles.
Brass, 7 to 13 inches inclusive....⅌ ℔ 32c net
Brass larger than 13 inches....⅌ ℔ 35c net
Enameled....dis 45 %

Knives.
Ames' Butcher Knives....dis 20 %
" Shoe....dis 15 %
" Bread....⅌ doz $1.50, dis 15 %
Moran's Shoe and Bread Knives....dis 20 %
Hay and Straw—Wadsworth's....dis 33⅓ %
Table and Pocket....See Cutlery

Knobs.
Carriage (Jap'd 80c. ⅌ gross)....dis 55 &10%
Base—Common....dis 30&10%
Hemacite Door Knobs....New list, dis 35&5 %
Door, Mineral / " Por Jap'd / " " Plated / " " Por } Same discounts as Door Locks.
Furniture, Plain....75c gross inch, dis 10 %
" Wood Screws....dis 20 %
Picture (T. & S. Mfg. Co.)....dis 50&10 %
" Sargent's....dis 60&10 %
Hemacite Picture....dis 35 %
Shutter, Porcelain....dis 60&10 %

Ladles.
Melting—Sargent's....dis 50&10 %
" Reading....dis 20&10 %
" Monroe's Patent....⅌ doz $4.00, dis 40 %

Lanterns.
Tubular....No. 0, $8.65; No. 1, $10.15 } net
With Guards 35c extra. }
Hurricane No. 2....⅌ doz $5.75, net
Peerless....No. 5, ⅌ doz $11.75, dis 10&10 %
Brady's Patent....dis 10&10 %
Ætna....dis 10&20 %
Yankee....dis 10&10 %
De Beque....dis 10&10 %
Police..Small, $7.00; Med., $8.25; Large, $12.00, dis 10 %
Convex Reflector....$2.75 ⅌ doz, dis 10 %

Lemon Squeezers.
Porcelain Lined....⅌ doz $6 00—dis 30 %
Wood....⅌ doz $3.00—dis 30 %
Eureka, Tinned....⅌ doz $8.00—dis 10 %
Dunlap's Improved....⅌ doz $1.00 net
Sammis'....No. 1, $7.00; No. 2, $12.00 ⅌ doz; dis 45 %
Townsend's Patent....$6.00 ⅌ doz., dis 33⅓ %

Lines.—Linen Fish....dis 25&10 %
Cotton Chalk....dis 55 %
Sil. Lake Chalk....Nos. 0, 1, 2, 3, $6.00, $6.50, $7.00, $7.50....dis 25 %
Mason's Linen....dis 25&10 %
Wire Clothes, Galvanized....each 25 @ 40c net

Locks and Latches.
Cabinet—Eagle / " Gaylord / " Bridgeport } Changes made in list price of some numbers Jan. 1, 1881, dis 25&2 %
" A. E. Deitz....dis 20@10 %
Trunk, new list, Jan. 1, 1881....dis 20 %
Langstroth & Crane's List Jan. 1 '77.
Round Key, No. 2 to 5....dis 40&10 %
" No. 5½ to 13....dis 40&10 %
Flat Key....dis 33⅓&10 %
A. E. Deitz, Flat Key....dis 30 %
Yale Lock Co., Flat Key....dis 10 %
"Shepardson" or "U. S."....dis 35 %
"Feiter" or "American"....dis 33⅓ %
Plate....dis 33⅓&2 %
F. Many's "Extension Cylinder"....$10.50 ⅌ doz, net

DOOR LOCKS, &C
Branford / Norwalk / Norwich / P. & F. Corbin / Russell & Erwin / Mallory, Wheeler & Co. / Reading Hardware Co. / Trenton Lock Co. } List of June 10, with changes of Dec. 1, 1880.
Padlocks—Russell & Erwin / " Mallory, Wheeler & Co. / " Wm. Wilcox & Co. } ....dis 40 and 2 % for cas
" Yale Lock Mfg. Co.'s "Standard"....dis 40 %
" Romer's....dis 30 %
" Conestoga....dis 60 %
" J. H. McWilliams....dis 10 %
" A. E. Dietz....dis 35 %

Mallets.—Hickory....dis 10& 10%
" Lignumvitæ....dis 20 %
Penfield Block Works, Lig., Apple & Hickory..dis 30 %

Meat Cutters.
Dixon's (P. S. & W.) Nos. 1 3 4
⅌ doz..$14.00 17.00 19.00 30.00—dis 35 %
Miles' Challenge....Nos. 1 2 3
⅌ doz..$22.00 30.00 40.00—dis 35 %
Perry's Nos. 1 2 3 4 4 g'rd 5 g'rd
Each....$3.00 4.00 5.00 11.00 13.00 36.00—dis 30 %
Woodruff's (P. S. & W.)....Nos. 100 150
⅌ doz $15.00 18.00 dis 35 %
Hales'....Nos. 11 12 13
⅌ doz..$27.00 33.00 45.00..dis 40&10&2 %
Draw Cut....Nos 5 2 6 8 10
Each..$50.00 75.00 80.00 225.00 400.00—dis 20 %
American....dis 25 %
Nos....1 2 3 4 B 5
Each....$5.00 7.00 10.00 25.00 50.00 60.00
Kieser's No. 55....$40 per doz., dis 40 %
" Gem....$25 per doz., dis 40 %
Silver & Deming....dis 25 %
Pennsylvania....dis 40&10 %
Nos. 1 2 3 00
⅌ doz....$24.00 28.00 36.00 28.00
Beef Shavers (Enterprise Mfg. Co)....dis

Mincing Knives.
Am., (2d quality) per gross, 1 blade, $7; 2 blades, $12; 3 blades, $18....net
Lathrop's....dis 15&10 %
Smith's....per doz $1.75, dis 10 %
Cowles Hdw. Co....dis 40&10 %

Molasses Gates.
Stebbins Pattern....dis 50&10 %
" Genuine....dis 47½&10 %
" Tinned Ends....dis 40&10 %
Chase's Hard Metal....dis 50&10 %
Bush's....dis 20 %
Lincoln's Pattern....dis 50&10 %
Weed's....dis 15 %
Boss, No. 1 2 3 4
$7.00 $8.00 $9.00 $10.00 per doz.
" Japanned Finish....dis 50&10 %
" Bronze "....dis 45&10 %

Nails....See Trade Report

Nuts and Washers.
Square Nuts....7¾c off list
Hexagon Nuts....7½c off list
Washers....7½c off list

Nut Crackers
Table (Humason & Beckley Mfg. Co.)....dis 33⅓ %
Blake's Pattern....⅌ doz $3.00, dis 10 %
Turner & Seymour Mfg. Co....dis 50 %

Oakum.
Best....⅌ ℔ 11c
U. S. Navy....⅌ ℔ 10c
Navy....⅌ ℔ 8½c

Oilers.—Zinc and Tin....dis 50 %
Brass and Copper....dis 40 %
Malleable (Hammer's)....⅌ doz $5.00, dis 10 %
Prior's Patent or "Paragon Zinc....dis 50 %
" " Brass....dis 40 %
Olmstead's, Tin and Zinc....dis 50 %
" Brass and Copper....dis 40 %
Broughton's, Zinc....dis 40 %
" Brass....dis 30 %

Ox Balls....dis 40&10%

Pencils.
Faber's Carpenters'....High list, dis 40&10 %
" Round Gilt....⅌ gross $5.25 net
Dixon's Lead....⅌ gross 4.50 net
" Lumber....⅌ gross
Dixon's Carpenters'....dis 40 & 10 %

Packing, Steam.
N. Y. Belting and Packing Co....new list net

Picture Nails.
Brass Head, Sargent's List....dis 50&10 %
" T. & S. Mfg. Co....dis 40 %
Porcelain Head, Sargent's List....dis 50&10 %
" " Judd's List....dis 30 %
Porcelain Head, T. & S. Mfg. Co....dis 33⅓ %
Niles' Patent....dis 25 %

Pinking Irons....⅌ doz 75c, net

Plaiting Machines.
Magic....⅌ doz $10.00, net
Astor Plaiting Machine....each $15.00, dis 20 %
Crown Plaiting Machines....dis 25 %
6in., $6.00, 10in., $10.00 each

Planes and Plane Irons.
Bench, First Quality....dis 25&7½ %
" Second "....dis 30&7½ %
Moulding....dis 25 %
Bailey's (Stanley R. & L. Co.) new list Jan. '79.dis 20&10 %
The Stanley (S. R. & L. Co.) "....dis 20&10 %
Bailey's "Victor"....dis 20&10 %
Defiance Adjustable....dis 20&10 %
Plane Irons, Butcher's....$5.50 to £
" Buck Bros....$5.00 to £
" Auburn Tool Co.'s....dis 5&10 %
" The Globe Mfg. Co. "Baldwin Iron"....dis 5&10 %
" Ohio Tool Co....dis 5&10 %
" Sandusky Tool Co....dis 5&10 %

Pliers and Nippers.
Button's Patent....dis 33⅓ %
Hall's Pat. Compound Lever Cutting Nippers No. 2; 5 in., $20; No. 4, 7 in., $30 ⅌ doz....dis 45 %
Humason & Beckley Mfg. Co....dis 33⅓ %
Gas Pliers....dis 50 %
Eureka Pliers and Nippers....dis 25 %
Russell's Parallel....dis 25 %
P. S. & W. Cast Steel....dis 35 %
" Tinners' Cutting Nippers....dis 15 %

Plumbs and Levels.
Disston's....dis 70 %
Stanley R. & L. Co.'s Pat. Adjustable....dis 60&10 %
" " " Non-Adjustable....dis 50&10 %
Chapin's Patent Adjustable....dis 60&10%
" Non-Adjustable....dis 60&10 %
Standard Rule Co.'s New Adjustable....dis 60&10 %
" Non-Adjustable....dis 60&10 %
Johnson's Patent Adjustable....dis 60&10 %
Pocket Levels....dis 60&10 %
Davis' Inclinometers....dis 20 %

Post Hole and Tree Augers.
Samson Post Hole Digger....per doz $37.50, dis 20 %
Fletcher Post Hole Augers....⅌ doz 36.00, dis 20 %
Vaughan's Post Hole—
6 in. $22.60; 7, 8 and 9 in. $25 per doz....dis 15&10 %
Eureka Diggers ⅌ doz. $40.00....dis 25&10 %

Pruning Hooks and Shears.
Disston's Combined Pruning Hook and Saw per doz $19.00, dis 20 %
" Pruning Hook....12.50, dis 20 %
E. S. Lee & Co.'s Pruner....dis 30 %
Pruning Shears....⅌ doz $5.50@$6.00

Pulleys.
Hot House and Tackle....dis 60&10 %
Jap'd Screw....dis 60&10 %
Brass Screw....dis 60&10 %
Jap'd Side....dis 60&10 %
" Clothes Line....dis 60&10 %
Hay Fork Solid Eye, $4.50; Swivel, $5.00, dis 40&10&10 %
" " "Anti-Friction,"....$7.50 dis 20&10 %
" " "F" Common and Pat. Bushed....dis 20 %
" " Tarbox Pat. Iron....dis 20 %
Shade Rack....dis 50 %

Punches.
Belt or Drive....⅌ doz $2.00; 2.25; 2.50, dis 50 %
Bemis & Call Co.'s Cast Steel Drive....dis 50&5 %
" " Springfield Socket....dis 50&5 %
Spring....⅌ doz $7.00, dis 50&5 %
" Leach's Patent....dis 15%
Bemis & Call Co.'s Spring and Check....dis 40 %
Solid, Tinners'....⅌ doz $1.44, dis 40 %

Rail.
Sliding Door Wrought Brass.....₩ ℔ 42c dis 20 %
" " Iron, Painted ₩ foot 10c. dis 60&10
Barn Door....Inch..... ½ ⅝ ¾
Per 100 feet. $2.00 3.00 5.00—dis 10 %
" for N. E. Hangers—
Small. Med. Large.
Per 100 feet. .. ..$2.10 2.70 3.30—net

Razors.
J. R. Torrey Razor Co.....dis 10 @ 20 %

Razor Straps.
Genuine Emerson.....dis 40@50 %
Badger's Emerson.....dis 40 %
Badger's (not Emerson).....dis 25 %
Evans'.....dis 40 %
Imitation Emerson.....₩ doz $2.00. dis 20 %
Hunt's.....dis 40&5 %
Chapman.....dis 15 @ 20 %
Saunder's.....dis 10 %
Torrey's.....dis 20 %

Rivets.
Iron and Tinned.....dis 50&7½ %
In bulk, list of May 21.....dis 30&7½ %
Copper Rivets and Burs.....dis 33⅓ %
Nos.. " 8 9 10 11 12 13 14 15
₩ ℔..40c 50c 52c 54c 56c 58c 60c 64c 70c
Tinned Iron Belt Rivets and Burs.....dis3c&7½ %

Rivet Sets.....40 %

Rods.
Stair.....New , March 1 '79, 10%
" American Patent.....dis 20 %

Rollers.
Barn Door, Sargent's list.....dis 55&10 %
Novelty.....dis 10 %
Acme (Anti-Friction).....dis 50 %

Rope. Manufacturers' Net List, Sept. 20, 1880
Manila.....½ inch and larger ₩ ℔ 13 c
" .....⅝ inch ₩ ℔ 13½c
" .....¾ and 7-16 inch ₩ ℔ 14 c
" Tar'd Rope..... ₩ ℔ 12½c
" Lath Yarn..... ₩ ℔ 12½c
" Hay Rope..... ₩ ℔ 13 c
Sisal..... ½ inch and larger ₩ ℔ 10½c
" .....⅝ inch ₩ ℔ 11 c
" .....¾ and 7-16 inch ₩ ℔ 11½c
" Hay Rope..... ₩ ℔ 10½c

Rules. Boxwood. Ivory
Chapin's.. .. .. } dis } dis
Standard.... .....
Stanley.....
Stephens.....

Sad Irons.
From 4 to 10 lbs.....₩ ℔ 37½c net
Self-Heating.....₩ doz $6.50 net
" Tailors'.....₩ doz $18.00 net
Gleason's Shield and Toilet.....dis 25 %
Enterprise Patent Cold Handle.....dis 35 %
Mrs. Pott's Pat. Cold Handle, "Crown".....dis 35 %
Combined Fluter and Sad Iron..per doz $15.00, dis 15 %

Sand Paper.
Baeder & Adamson's Flint, 00 to 1½..$4.75 ₩ ream } dis
" " " 2, 2½ & 3. 4.25 ₩ ream } dis
" " " Assorted 4.75 ₩ ream } 20@
" " Star..... 5.75 ₩ ream } 25 %
" " Emery..₩ ream $6.50 @ 11.50
Barteles Flint, same list as B & A.....dis. 25%
" Harrison, $3.75 per ream.....dis 25%
New England, same list as B. & A. Flint.....dis 20@25 %
Gage's.....dis 20&2 %

Sash Cord.
Common.....₩ ℔ 14 @ 20c net
Patent.....₩ ℔ 19c net
Silver Lake Russia Flax.....₩ ℔ 64c. dis 10 %
" White Cotton.....₩ ℔ 60c. dis 10 %
" Drab Cotton.....₩ ℔ 65c. dis 10 %
Raw Hide.....dis 25 %
Steel Ribbon.....dis 10 %

Sash Locks.
Clark's, No. 1, $10.00; No. 2, $8.00 per gross.....dis 33⅓%
Ferguson's.....dis 33⅓ %
Walker's.....net
Hammond's Window Springs.....dis 25 %
Northup Window Springs, No. 1, $10.00; ₩ gross. dis 15 %
The Perfect, Clark & Smith, Plain Jap'd ₩ gro $10.00 net
" " Por. Knob Jap'd. ₩ gro 14.00 net
" " Nickel-Plated...₩ gro 27.00 net

Sash Weights.—Solid Eyes, in 500 ℔ lots and over.....₩ ℔ 1¾c net

Sausage Stuffers or Fillers.
Miles.....₩ doz $20, dis 30 %
Perry.....₩ doz, No. 1½ No. 0, $21, dis 35 %
Straw Cut No. 4.....each $30.00, dis 20 %
Enterprise Mfg. Co.....dis 25 %
Silver's.....dis 25%

Saws.
Disston's Circular.....dis
" Mill.....dis
" Cross Cut.....dis
" Hand, Panel, Rip, &c.....dis 20 %
Boynton's Lightning, Cross Cuts, new list.....dis 20 %
" One-Man, all lengths, " .....dis 20 %
" Billet Webs, 30 in. " .....dis 25 %
" Lightning Buck Saws X Far.....dis 25 %
" Lightning Hand, Panel and Rip.....dis 25 %
Wheeler & Clemson Mfg. Co.'s Hand.....dis 20 %
W. M. & C. Mfg. Co. Cross-Cuts, except Monarch, dis 20 %
Livingston's Butcher and Kitchen.....dis 20 %
Framed Wood—
Nos.... 101 102 103 104 105
Per doz..$10.00 8.50 10.00 7.50 6.25 net

Saw Frames.
White, Vermont.....₩ doz $1.35, dis 25 %
Red, Polished and Varnished.....₩ doz $2.00, dis 25 %
Saw Rods.....$10 list dis. 10&10 %

Saw Sets.
Boynton's Patent X Cut, per doz. $12.00; Hand Saw, per doz.. $10.00.....dis 20 %
Stillman's Genuine.....₩ doz $3.50@$6.50 dis 10 %
" Imitation.....₩ doz $3.25. dis 10&10 %
Common Lever.....per doz $2.00. dis 30&10 %
Leach's.....No. 0, $8.00; No. 1, $15.00, dis 15 %
Nash's.....No. 1, $8.50; No. 2, $7.00, dis 20 %
Hammer, Hotchkiss.....$6.00, dis 10 %
" Bemis & Call Co.'s New Pat.....dis 40&5 %
Bemis & Call Co.'s Lever & Spring Hammer..dis 20&5 %
" " Plate.....dis 10 %
" " Cross Cut.....dis 12½ %
Aiken's Genuine.....$13.00. dis 5 &10 %
" Imitation.....$7.00. dis 10 %
Hart's Patent Lever.....dis 20 %
Disston's.....dis 20 %

Scales.
Hatch, Counter, No. 171.....₩ doz $36. dis 35&10 %
" Tea, No. 161.....₩ doz $16.00 dis 30&10 %
Union Platform.....$9.00. dis 45 %
Fairbanks'.....dis 20 %
Buffalo Scale Co.....dis20&5 %
Howe's.....dis 20&5 %
Chatillon's Grocers'.....dis 45 %
" Eureka.....dis 25 %
Family Universal.....dis 50 %
" Favorite .....dis 40 %
" Turnbull's.....dis 30 %
Scale Beams, Chatillon's list.....dis 10 %
" Sargent's list.....dis 40&10 %

Scrapers.
Adjustable Box Scraper (S. R. & L. Co.).$6.50.dis 20&10 %
Box, 1 Handle.....₩ doz $6.00, dis 10 %
" 2 " .....₩ doz 5.00 dis 10 %
Defiance Box and Ship.....dis 20&10 %
Foot.....dis 70&10 %
Ship (common).....per doz $3.00 net
" (Providence Tool Co.....dis 10 %

Screw Drivers.
Douglass Mfg. Co.....dis 20&10&10 %
Disston's.....dis 50 %
Disston's Patent Excelsior.....dis 50 %
Buck Bros.....dis 25 %
Stanley Rule & Level Cos., Varnished Hdls...dis 50&10 %
" " " Black Handles...dis 40&10 %
Sargent & Co.'s.....dis 50&10 %
Gay's Double Action Ratchet per doz., 4 in., $9.00; 5 in., $10.20; 6 in., $12.00 dis 30 %
Cowles Hdw. Co., No. 1 Extra.....dis 40&10 %
" " No. 1.....dis 50&10 %
" " Nos. 4 and 5.....dis 30 %

Screws.
Flat H'd Iron.....dis 50 %
Round Head Iron.....dis 45 %
Flat Head Brass.....dis 50 %
Round Head Brass.....dis 40 %
Brass and Silver Capped.....dis 40 %
Japanned, list of Plain Screws.....dis 30&10 %
Coach Patent Gimlet Point. List per 100.....dis 65 %
Coach, Common.....dis 60&10 %
Bed.....dis 10 %
Machine, Flat Head, Iron, Am. Screw Co.....dis 60 %
" Round Head, Iron, " .....dis 55 %
Bench, Iron.....dis 55 %
" Wood, Beech.....₩ doz $3.50. dis 10 %
" Hickory.....dis 20&10 %
Hand.....dis 20&10 %
Hand Rail, Sargent's.....dis 60&10&10 %
" " Humason, Beckley & Co.....dis 50 %
" " Am. Screw Co., list of Jan. 1, '81.dis 60&10 %
Jack (Wilson's).....dis 20 %

Screw Window Balances.
R. B. Huguenin's.....$36.00 per gross, dis 25% 10&5 %

Scroll Saws.
Lester, $10.0.....dis 20 %
Rogers, $3.50.....dis 25 %

Shears and Scissors.
American (Cast) Iron.....dis 60&10 %
Clipper Cast Iron.....dis 70&10
Pruning.....see Pruning Hooks and Shears.
Barnard's Lamp Trimmers.....₩ doz $3.75
Tinners'.....dis 15 %
Seymour's, List, Nov. 25, 1879.....dis 60 %
Heinsch's " " .....dis 60 %
" Tailors' Shears.....dis 33⅓ %
Mass. Cutlery Co. St. Trimmers.....dis 75 %

Sheaves.
Sliding Door, M. W. & Co., list.....dis 50&2 %
" R. & E. list.....dis 60&10&2 %
" Patent Roller.....dis 10 %
" " Hatfield's.....dis 60&10&2 %
" Russell's Anti-Friction ....dis 60&10&2 %
" Moore's Anti-Friction.....dis 40 %
Sliding Shutter, R. & E. list.....dis 60&10 &2 %
" " Sargent's list.....dis 55&10 %
Moore's Anti-Friction (Hanging).....dis 40 %

Shovels and Spades.
Ames. New list. Jan. 26. 1880.....dis 12½ %
Bussey Binns & Co., Patent.....dis 15 %
" Association List.....dis 5 %
Old Colony.....dis 12½ %
Remington's (Lowman's Patent).....dis 25 %
Rowland's.....dis 40 %
Griffiths.....dis 40&10 %

Shovels and Tongs.
Iron and Brass Head, R. & E. list.....dis 40&10&2½
Polished Steel .....New list. dis 40&10&2 %

Slates.
Square Frames.....by case.....dis 70 %
Less than a case.....dis 65&10 %

Spoke Shaves.
Defiance Metallic.....dis 20&10 %
Iron.....dis 45 %
Wood.....dis 30 %
Bailey's (Stanley R & L. Co.) new list..... dis 20&10 %
Stearns'.....dis 10&10 %

Spoke Trimmers.
Bonney's.....₩ doz $10.00 dis 40&5 %
Stearn's.....₩ doz $10.00 dis 40 %
Ives'.....No. 1, $15.00; No. 2, $12.00 ₩ doz, dis 50&10 %
Douglass'.....₩ doz $9.00. dis 15 %

Spoons.
Basting.....dis 55 %
Riveted Table and Tea.....dis 55 %
Solid Table and Tea.....dis 55 %
Britannia.....dis 60 %
The Wm. Rogers Mfg. Co.....dis 33⅓&2 %
Reed & Barton.....dis 33⅓&2 %
Hall & Elton.....dis 33⅓&2 %
Holmes, Booth & Haydens.....dis 33⅓&2 %
German Silver.....dis 25&10 %
Cast Steel, Sil. Plated.....dis 33⅓ %
Tin (P. S. & W.), Teas.....$1.25 ₩ gross, net
" " Tables.....$2.00 ₩ gross, net
Tin Cowles Hdw. Co.).....dis 10 %
" " " case lots.....dis 20 %

Stocks and Dies......dis 5&10 %
"Lightning" Screw Plate.....dis 10 %

Stone.
Hindostan Hacker Stone.....₩ gross $12.00 dis 10 %
Sand Stone.....₩ ℔ 6c. dis 33⅓&10 %
Washita Stone.....No 1. ₩ ℔ 18c net
" .....No 2. ₩ ℔ 15c net
" Slips.....No. 1. ₩ ℔ 36c net
Arkansas Stone No. 1, 4 to 6 in.....₩ ℔ $1.35 net.
" No 1, 6 to 9 in.....₩ ℔ $2.00 net
Turkey Oil Stone (Chase).....4 to 8in, $1.00 ₩ ℔.
" Slips " .....$2.50 ₩ ℔ dis 10 %
Lake Superior (Chase).....₩ ℔ 20c, dis 10&5 %
" " Slips " .....₩ ℔ 14c, dis 10&5 %
Grindstones. Family, Loring's.....dis 10 %

Stove Polish.
Joseph Dixon's.....₩ gross $5.76 net
Gem.....₩ gross $4.50, dis 10 %
Gold Medal.....₩ gross $7.00, dis 25 %
"Mirror".....₩ gross $6.00, dis 5 %
Ruby.....₩ gross $3.75, net
Rising Sun.....₩ gross $4.75, net
Dixon's Plumbago.....₩ ℔ 8c. net

Squares.
Steel.....dis 50 %; full cases, dis 10&10 %
Iron.....dis 50 %; full cases, dis 50&10 %
Nickel Plated.....add $2.50 @ $4.00 ₩ doz. net
Try Squares and T Bevels.....dis 45&10
Disston's Try Square and T Bevels.....dis 52½ %
Winterbottom's Try and Mitre.....dis 20&10 %

Tacks, Brads, &c.
List of April 2, 1880
Tinned Swedes Tacks.....dis 45 %
Tinned American " .....dis 55 %
Swedes Tacks, all kinds.....dis 40 %
Copper Tacks and Nails.....dis 30 %
Swedes Hungarian Nails .....dis 30 %
American " " .....dis 30 %
Gimp and Lace Tacks.....dis 30 %
Finishing Nails.....dis 25 %
Trunk and Clout Nails.....dis 25 %
Common and Patent Brads.....dis 20 %
Basket Nails .....dis 25 %
Brush Tacks.....dis 20 %
Leathered Carpet Tacks.....dis 20 %
American Cut Tacks.....dis 25 %
Cigar Box Nails.....dis 25 %
Chair Nails.....dis 25 %
Double-Pointed Tacks .....dis 40&5 %
Extra 10 % on all.

Tap Borers.
Common and Ring.....dis 15 %
Ives' Tap Borers.....dis 15&10 %
Enterprise Mfg. Co.....dis 25 %

Tapes, Measuring.
American.....dis 20 %
Spring Tapes.....dis 25&10 %

Thermometers.
Tin Case .....dis 65&10 %

Tobacco Cutters.
Enterprise Mfg. Co. (Champion).....dis 20 %
Wood Bottom.....₩ doz $12.00, dis 40&5 %
All Iron.....₩ doz $9.50, dis 40&5 %
Nashua Lock Co.'s.....₩ doz $18.00, dis 50@55 %

Toe Calks.—Winsted.....₩ ℔ 9c. dis 5

Tinners' Tools and Machines.
Machines (P. S. & W.).....list add 20 %
Tools (P. S. & W.).....add 6 %

Transom Lifters.
Wollensak's Patent.....dis 35 %

Traps.
Game Newhouse.....dis 40 %
" Newhouse Pattern.....dis 50 @ 55 %
" Blake's Patent.....dis 40 %
Mouse, Wood, Choker.....₩ doz holes, 16½c
" Round Wire.....₩ doz $1.50, dis 10 %
" Cage " .....₩ doz $2.50. dis 10 %
" Catch-em-alive.....₩ doz $2.50, dis 10 %
Rat. "Decoy".....per doz $10.00, dis 10 %

Trowels.
Cothrops Brick and Plastering.....dis 20 %
Reed's Brick and Plastering.....dis 15 %
Disston's Brick and Plastering.....dis 20 %
Peace's Plastering.....dis 30 %
Clement & Maynard's.....dis 20 %
Rose's Brick.....dis 15 %
Brades' Brick.....dis 20 %
Worrall's Brick and Plastering.....dis 20 %
Garden.....dis 45 %

Triers.
Butter and Cheese.....dis 20%

Vises.
Solid Box.....List of July 1, '79 dis 30 %
" "Crown" (A. H. Hildick) 40 to 100 ℔, 15c net
" Peter Wrights.....15½c
Parallel, Parker's.....dis 10 %
" Wilson's.....dis 40 %
" Howard's.....dis 20&10 %
" Merrill's.....dis 15 %
" Sargent's.....dis 55&10 %
" Trenton.....dis 30 %
" Backus and Union.....dis 40 %
" Oval Side.....dis 40 %
" Double Screw Leg.....dis 15&10 %
" Prentiss.....dis 25 %
" Stevens'.....dis 20 %
" Simpson's Adjustable.....dis 25 %
"Family" List.....net
Saw Filers, Bonney's.....₩ doz $14.00. dis 20&10 %
" Stearn's.....dis 20&10 %
" Hopkins'.....₩ doz $17.50 dis 10 %
Lowell Hand Vises.....dis 20 %
Richardson's Vise and Anvil.....dis 25 %

Washer Cutters.
Smith's Patent .....₩ doz $12.00 dis 25 %
Johnson's.....₩ doz $12.00. dis 33⅓ %
Penny's.....₩ doz $14.00 and $16.00. dis 35 %
Appleton's.....₩ doz $16.00, dis 60&10 %

Washers.—See Nuts and Washers.

Well Wheels.—Revised list.....dis 60&10%

Wire.
Brass and Copper..... List of June 10. 1880....dis 20 %
Bright and Annealed.... Nos. 0 @ 18. dis 47½ @ 52½ %
" " .....Nos. 19 @ 26. dis 55 @ 60 %
" " .....Nos. 27 @ 36. dis 62½ @ 65 %
Coppered.....Nos. 0 @ 18. dis 42½ @ 47½ %
Galvanized, Nos. 0 to 6.....₩ ℔ 10c. dis 35 @ 37½ %
" Nos. 7 to 18.....market list. dis 35 @ 37½ %
Tinned, Nos. 0 to 18.....dis 40 @ 45 %
Cast Steel.....dis 25 @ 30 %
Tinned Broom Wire, Nos. 12 to 24.....dis 47½ @ 50 %
Annealed Fence, Nos. 8 and 9 .....dis 47½ @ 52½ %
" Grape, Nos. 10 to 14. .....dis 47½ @ 52½ %
Galvanized Telegraph, Nos. 7 to 9 .....₩ ℔ 9c
" " Nos. 10 and 11.....₩ ℔ 10c
" No. 12.....₩ ℔ 10½ c
Fence Staples.....₩ ℔ 7½@ 7½c
" Staples, Galvanized.....₩ ℔ 8½ @ 8½c.
Styles Steel Wire.....$7.00 to £
Japanned Barb Fence.....₩ ℔ 9c
Galvanized " .....₩ ℔ 10c
Steel Music Wire, Nos. 12 to 27.....₩ ℔ $1.20. net
Turner & Seymour Mfg. Co., Picture Wire..dis 80&20 %
Judd's Picture Wire.....dis 80&20 %
Clothes Line Wire, Galvanized.....₩ coil 25@40c net
Wire Cloth, green and drab.....₩ sq. ft, 3½ c net

Wrenches.
American Adjustable.....dis 45 %
Baxter's Adjustable "S."..... list Jan., 1880. dis 25 %
" Diagonal.....dis 25 %
Coes 'Genuine.....dis 5 @ 15 %
" "Mechanics".....dis 40&10 %
" Pattern, Malleable.....dis 70 %
Girard Standard.....dis 50&10 %
Girard Agl. .....60&10 %
Bemis & Call's Patent Combination.....dis 20 %
" " Merrick's Pattern.....dis 35 %
" " Briggs' Pattern.....dis 25 %
" " Cylinder or Gas Pipe.....dis 40 %
Van Wagoner & Williams' Basin .....per doz $4.50
Aiken Pocket (Bright).....$6.00. dis 60&10 %
The Favorite Pocket (Bright).....per doz $8, dis 60 %
Webster's Pat. Combination.....dis 25 %

Wringers. Per doz.
Universal, XX No. 2½.....$50.00
" " No. 2.....60.00
" " No. 1½.....77.00
" " No. 1.....93.00
" " No. 8.....each, 12.00
" " No. 12....." 20.00
" " No. 18....." 25.00
" " No. 22....." 32.00
Peerless, No. 0, no Cogs.....51.00
" No. 1.....54.00
" No. 2½, with Cogs.....60.00
" No. 2, " 63.00
" No. 3, " 71.00
" No. 4, " 90.00
Unique, No. 0.....51.00
" No. 1.....54.00
Eureka, No. 2.....54.00
Novelty, No. 10, with Cog Wheels.....60.00
" No. 2, ...63.00
Excelsior, No. A, with Folding Bench.....75.00
" No. E, for Set Tubs.....90.00

NEW YORK WHOLESALE PRICES, January 5, 1881.

METALS.

IRON.—DUTY: Bars, 1 to 1½c. ₩ ℔; Sheet, Band Hoop and Scroll. 1¼ to 1¾c. ₩ ℔; provided, that none of the above iron shall pay a less rate of duty than 35 per cent. Pig, $7 ₩ ton; Polished Sheet, 3c. ₩ ℔; Wrought Scrap, $2 ₩ ton; Cast Scrap, $6 per ton. Railroad 70c. ₩ 100 ℔s. Boiler and Plate, 1¼c. ₩ ℔.

Iron—AMERICAN		
Foundry No. 1	₩ ton	$25.00
" No. 2	₩ ton	21.00 @ 22.00
Gray Forge	₩ ton	20.00 @ 21.00
SCOTCH.		
Eglinton	₩ ton	21.50
Carnbroe	₩ ton	22.40
Coltness	₩ ton	23 50 @ 24.00
Glengarnock	₩ ton	22.40 @ 23.00
Gartsherrie	₩ ton	22.50 @ 23.00
Rails.		
Iron	₩ ton	$46.00 @ 49.00
Steel (at mill)	₩ ton	57.50 @ 62.50
Old Rails	₩ ton	26.50 @ 28.00
Scrap.		
Wrought Scrap	₩ ton	28.00

Bar Iron, from Store.—

Common Iron:		
¾ to 2 in. round and square	₩ ℔	2.30
1 1-2 to 6 in. x ¾ to 1 in.	₩ ℔	2.30
Refined Iron		
¾ to 2 in. round and square	₩ ℔	2.50
1 to 6 in. x ¾ to 1 in.	₩ ℔	2.50
1 to 6 in. x ¼ and 5-16	₩ ℔	2.70
Rods—¾ and 11-16 round and square	₩ ℔	2.60
Bands—1 to 6 x 3-16 to No. 12	₩ ℔	3.10
Norway Nail Rods		6¼ @ 6½c

Sheet Iron.

	Common American	R. G. American.
08. 10 to 20	₩ ℔ 3¾	5
21 to 24	₩ ℔ 3¾	5
25 to 26	₩ ℔ 4¼c	5¼
27	₩ ℔ 4½c	5¾
28	₩ ℔ 4¾c	5¾
	B.B.	2d qual.
Galvanized, 10 to 20	₩ ℔ 8c	7c
21 to 24	₩ ℔ 9c	8c
25 to 26	₩ ℔ 9½c	8½c
" 27	₩ ℔ 10¼c	9c
" 28	₩ ℔ 11c	9½c

Patent Planished ₩ ℔ 12c; B. 10½c
Russia 11 @12 c
American Cold Rolled ₩ ℔ 5 @7½c

COPPER.—DUTY: Pig, Bar and Ingot 1, 2c; Old Copper 4c ℔; ₩ Manufactured (including all article of which Copper is a component of chief value), 45 % ad valorem.
American Ingot ₩ ℔ See Trade Report.

SHEATHING, BRAZIERS' COPPER, BOLTS, &c.

Braziers' Copper, ordinary sizes, 16oz. per sq. ft., and over per lb. 28c
Braziers' Copper, ordinary sizes, under 16 oz. and over 12 oz. ₩ sq. ft. ₩ ℔ 30c
Braziers' Copper 10 oz and 12 oz., ₩ sq. ft. ₩ ℔ 32c
Lighter than 10 oz. ₩ sq. ft. ₩ ℔ 34c
Circles less than 24 in. in diameter ₩ ℔ 31c
Circles 24 in. diameter and over ₩ ℔ 34c
Segment and Pattern Sheets ₩ ℔ 31c
Locomotive Fire Box Sheets ₩ ℔ 28c
Sheathing Copper, over 12 oz. ₩ sq. ft. ₩ ℔ 26c
Bolt Copper ₩ ℔ 26c
Copper Bottoms ₩ ℔ 31c
No Copper is Sheathing except 14x48 inches and not to exceed 34 oz. to the sq. ft.

TINNING.

14x48 ₩ sheet 80
All other size Sheets, 2½c. per square foot.
For tinning both sides, double the above amount

O'NEILL'S PATENT PLANISHED COPPER.—Nos.

14x48.		
and 12 oz. and heavier	₩ ℔ 36c	By the case, ₩ ℔ 35c
9 oz. and lighter	₩ ℔ 39c	" " ₩ ℔ 38c

Boiler Sizes.

7 in., 14x52. 8 in., 14x56. 9 in., 14x60.
and 16 oz. and heavier. ₩ ℔ 38c By the case. ₩ ℔ 37c
(And all sizes not over 20 in. wide.)
30x60.
4 and 6 oz. and heavier ₩ ℔ 40c
2 oz. ₩ ℔ 43c

Brass.

Brown & Sharp's Gauge the Standard for Metal; Old English Gauge the Standard for Wire.

BRASS MANUFACTURERS' PRICE LIST.—dis 20%. June 10, 1880.

Cash prices for Roll and Sheet Brass. For less quantity than 100 ℔s. add 3c ₩ ℔.

HIGH BRASS.

All Nos. not thinner than 10 No. 28, wider than 2 in., not wider than 14 in. 30c
All Nos. to No. 28, inclusive, and widths over 14 to 20 in., inclusive 34c
All Nos. to No. 28, inclusive, and widths over 20 to 30 in., inclusive 38c
½c ₩ ℔ advance on each No. above Nos. 28 to 36, inclusive.
All Brass thinner than No. 8 is Platers' Brass, at 43c
Sheets 24x48, and all sheets cut to particular sizes and lengths under 30 in., in width wider than 2 in. 37c
Printers' Rules 43c
Sheets wider than 30 in. and under 40 in. 47c
" 40 in. and over 50c

Circular Sheets, in diam. from 4 in. to 14, inclusive. 30c
" " " over 14 " 20, " 45c
" " " " 20 " 30, " 49c
" " " " 30 " 40, " 55c
" " " 40 in. 60c

LOW BRASS.

4c ₩ ℔ more than High Brass.
Gilding Metal, 8c ₩ ℔ more than High Brass.
Platers' or Gold Metal { In Bars 48c; Sawed 51c; Planed or Polished 54c

FOR SLITTING.

Metal in width 2 in. to ½ in. to No. 28, inclusive, 1c. ₩ ℔ advance.
Metal, in width 2 in to 1 in. thinner than No. 28, 2c. ₩ ℔ advance.
Metal, in width 1 in. to ¼ thinner than No. ₩ ℔ advance
Metal, in width ¼ in. to ¼, inclusive, not thinner than No. 28, 2c. ₩ ℔ advance.
Metal, in width ¼ in. to ¼ thinner than No. 28, 4c. ₩ ℔ advance.
Metal, ¼ in. in width and less, 10c. ₩ ℔ advance.
Any of the above widths cut to particular lengths, add 7c. ₩ ℔.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire.
4 per cent., 12 inch, to No. 26	$0.62	$0.70
6 " " "	.66	.76
10 " " "	.64	.88
15 " " "	.74	1.03
18 " " "	.80	1.13

German Silver Sheets over 12in. wide and weighing more than 10 ℔s., $2.00 ₩ ℔.
Advance 2c. for each additional inch in width above 12 in., and 2c. ₩ ℔ on each No. thinner than Nos. 26 to 36, inclusive
All German Silver thinner than No. 36 is Platers, at 50c ₩ ℔ additional.
German Silver Scrap one-half less than net price of 12 in Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.

BRASS AND COPPER WIRE.

	High Brass.	Low Brass.	Copper.
No. 0 to 20	$0.33	$0.37	$0.13
No. 21	.36	.40	.46
No. 22	.37	.41	.47
No. 23	.38	.42	.48
No. 24	.40	.44	.50
No. 25	.43	.47	.54
No. 26	.45	.49	.56
No. 27	.48	.53	.63
No. 28	.52	.56	.63
No. 29	.55	.59	.66
No. 30	.58	.62	.72
No. 31	.62	.66	.78
No. 32	.65	.70	.84
No. 33	.70	.74	.93
No 34	.74	.78	1.03

Spring Wire 2c ₩ ℔ advance.
Flat, Square and Half Round Wire 4c ₩ ℔ advance on Round Wire.
Fancy Wire not less than 10c ₩ ℔ advance of Round Wire.
Brass Rods, No. 8 and larger, not less than 2 feet lengths, 38c.
Wire straightened and cut, smaller than No. 8, and not less than 2 feet lengths, 43c.
Wire and Rods less than 2 feet lengths, special rates.
Twelve cents per ℔ extra for spooling on 1 ℔ spools

MISCELLANEOUS.

Brass Pail Ears	$0.50
Brass Door Rail	.43

SCRAP.—dis. 20 %

High Brass Scrap	13c
Low "	14c
Gilding "	16c

Turnings, Fittings and Chips half the price of Scrap.
Terms—Net cash. Interest to be added after thirty days.

TUBING.—dis 20 %

	₩ ℔
Plain No. 2 inclusive above ¼ in. to 3 in.	$0.13
" above 3 in.	.53

Nos. 21, 22, 23, two cents advance on List for each Number.
Nos. 24, 25, 26, four cents advance on List for each Number.
Above No. 26, special rates.

Plain, ¼ inch	.70
" 5-16 "	1.10
" ⅜ "	1.60

All Mandrel Drawn Tubes, 5 cents advance on List Prices.
Fancy Tubing to No 20 50c
English, Scotch and Extra Patterns Fancy Tubing to No. 20 55
Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List.
Add to 2 cents ¼ cent for each additional cutting under 2 feet.
All Mandrel Drawn Tubes under ⅜ in., 25 cents per pound advance.

ZINC TUBING.—dis 20 %.

Plain	.27
Fancy	.33
Scotch and Extra Patterns	.50

GERMAN SILVER TUBING.—dis 10 %

4 Per cent.	.80
6 "	.90
9 "	1.05
12 "	1.20
15 "	1.35
16 "	1.40
18 "	1.50
20 "	1.60

STEEL.—DUTY: Bars, Ingots, Sheets and Coils valued at 7 cents ₩ ℔., or under, 2½ cents; over, 7 cents, and not above 11, 3 cents ₩ ℔; over 11, 3½ cents ₩ ℔, and 10 % ad val. Railway Bars, 1¼ cents ₩ ℔. Railway Bars, in part Steel, 1 cent ₩ ℔. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as

American Cast Steel.

For American Steel see quotations under heading of Pittsburgh.

English Steel,—		
" Best Cast	₩ ℔	15½c
" Extra Cast	₩ ℔	16½c
" Round Machinery, Cast	₩ ℔	10c
" Swaged, Cast	₩ ℔	18c
" Best Double Shear	₩ ℔	15½c
" Blister, 1st quality	₩ ℔	13c
German Steel, Best	₩ ℔	11c
" 2d quality	₩ ℔	10c
" 3d quality	₩ ℔	9c
Sheet Cast Steel, 1st quality	₩ ℔	15½c
" 2d quality	₩ ℔	14½c
" 3d quality	₩ ℔	12½c

ANTIMONY See Trade Report

LEAD.—DUTY Pig $2 ₩ 100 ℔s; Old Lead, 1½c ℔ ₩ Pipe and Sheet, 2½c ₩ ℔.

American	5 @ 5½c
Bar	6c net
Pipe	6½c dis 10 %
Tin Lined Pipe	14c. dis 10 %
Sheet	7c. dis 10 %
Shot	Drop 7½c, Buck. 8½c
Chilled Shot	8½c

BABBITT METAL.

N. P. U. ₩ ℔ 7½ @ 80
A. 20c; B, 20c; C, 15c.

TIN.—DUTY: Plates, Sheets, Tagger and Terne, 1.1c ₩ ℔; Electro-galvanized Plates, 2c ₩ ℔; Manufactures of, not enumerated, 35 per cent. ad. val. Bars, Block and Pigs free. Banca, subject to duty of 10 per cent.

Banca	25 @ 26c
Straits	₩ ℔ 22c
English	22c

TIN PLATES.

I C 10x14 } Prime Charcoal 14x20 }	$6.25 @ $6.50
I C 12x12 "	6.50 @ 6.75
I X 10x14 } Charcoal 14x20 }	8.25
I X 12x12 " "	8.50
D C 12¼x17	6.75
D X 12¼x17	7.75
For each additional X add	2.00

COKE TIN PLATE.

	Best.	Ordinary.
I C 10x14	$5.00	5.00 @ 5.75
I C 14x20		
I C 12x13	6.25	5.50 @ 5.75

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	$6.50	5.25	5.00 @ 5.25
I X 14x20	7.50	....	....
I C 20x28	11.50	11.00	10.50 @ 11.00
I X 20x28	14.50	....	....
I C 20x20	12.50	" "	....
I C 14x20 M. F. Brand	....	....	7.75 @ 8.00

SOLDER No. 1, 12c @ 13 c; No 2, 11c

SPELTER—DUTY: in Pigs, Bars and Plates, $1.50 ₩ 100 ℔s.

American, cash	5¼ @ 5¾ c
Bergen Port from Lehigh Ore	10c
Lehigh, on spot	6c

ZINC.—DUTY: Pig or Block, 1.5c ₩ 100 ℔s. Sheet 2½c ₩ ℔.

Sheet, Cask	7¼ c
" Open	7¼ @ 8c

Paper Stock, &c.

(Dealers' Selling Price.)

White Shirt Cuttings, No. 1	6¼ @ 6¾
" " No. 2	5 @ 5¼
Mill Assorted Whites	5½ @ 5¾
Unbleached Muslins	6½ @ 6¾
City Whites, No. 1	4¾ @ 5
New Canton Flannels	6 @ 6¼
New Seconds, light	4½ @ ....
" dark	3½ @ 3¾
No. 2, Whites	3½ @ 3¾
Cotton Canvas	4¼ @ 4½
Linen Canvas, No. 1	4½ @ 4¾
Seconds, City	2 @ 2¼
Colors, per 100 lbs	90 @ $1.00
Manila Rope	3½ @ ....
" Tarred	2½ @ 2¾
Gunny Bagging, No. 1	2½ @ 2¾
" No. 2	2 @ 2¼
Kentucky Bagging	4¾ @ ....
Burlap Bagging, No. 1	2¾ @ 2¾
Tar Shakings	2 @ 2½
Hemp Twine Stock	4¾ @ 4¾
Hard White Shavings, No. 1	4¾@6 5
Soft White Shavings, No. 1	4¼ @ 4½
White Shavings, No. 2, soft	3¼ @ ....
Mixed Shavings, part white	3 @ 3¼
Ledger and Writing	3½ @ 3¾
Solid Stock	3¼ @ ....
Book Stock, No. 1, light	1¾ @ 2
Old Newspapers	2¼ @ 2½
Pure Manila	2½ @ 2¾
Bogus Manilas and Hardwares	1¾ @ 2
Commons	90 @ ....
Binders' Board Cuttings	1¾ @ 1¾
Straw Board Cuttings	1¼ @ 1¾

Paints, Oils, &c.

Paints.

Black Lamp, Coach Painters	₩ ℔	20c
" Ordinary		8c
" Ivory Drop, fair		12 @ 15c
" best		20c
Black Paint, in oil	Kegs 8c	asst'd cans, 11c
Blue Prussian, fair to best		40 @ 45c
" " in oil		45 @ 55c
Blue Chinese dry		8½c
" Ultramarine		18 @ 20c
Brown, Spanish		1½c
" Van Dyke		10@12c
Carmine, 40		combination price
Green, Chrome		15 @ 25c
" " in oil		14 @ 18 @ 25c
" Paris		good 24c; best, 30c
" " in oil		30c; 41c
Iron Paint, Bright Red	₩ ℔	2½c
" Brown	₩ ℔	15c
" Purple	₩ ℔	3c
" Ground in Oil, Bright Red	₩ ℔	5½c
" " " Red	₩ ℔	5c
" " " Brown	₩ ℔	4½c
" " " Purple	₩ ℔	5c
Mineral Paints		1½ @ 4c
Orange Mineral		10c
Red Lead, American		7½c
" English		none in market
" Venetian (N. C.) dry		$1.65 @ $1.70
" in oil		asst'd cans, 11c; kegs, 8c
" Indian dry		9 @ 12c
Rose Pink		10 @ 13c
Sienna, American, Raw		4c
" Burnt		4½c
" " in oil		10 @ 15 @ 20c
" Raw		11 @ 15 @ 25c
Umber, Burnt		4 @ 8c
" " in oil		9 @ 12 @ 15c
" Raw		3½ @ 7½c
" " in oil		10 @ 15 @ 18c
Vermillion, Chinese		0.00
" English		55 @ 57½c
" Trieste		1.10c
" American, Common		15c
" " in oil		85@ 90 90c
White Lead, American, pure dry		8c
" " " in oil		in bbls. 2 @ 2½c
Yellow Ochre, French		$1.75
" " in oil		asst'd cans, 11c; kegs, 8c
" " Vermont		in casks, 1½c
Yellow Chrome		17 @ 27c
" " in oil		14 @ 18 @ 25c
Zinc White American No. 1, dry		5 @ 5½
" " No. 1, in oil		9c
" French (Paris)		8 @ 10c
" " in oil		

Oils.

Linseed, Raw, in casks and bbls	gal. 58c
" Boiled, " " "	61c
Bleached Whale	₩ gal. 63c
" Sperm	₩ gal. $1.18
" Elephant	67c
Signal	60c
Prime Lard	70c
No. 1	65c
West Virginia	17c @ 24c
Drilling	40c
Empire Cylinder	34c
Miners' Oil	35 to 44c
Fish Oil, pressed	44c
Neatsfoot	74c
Tallow	08c
Machinery	40c
Engine	50c

Sundries.

Asphaltum		9c
Benzine	₩ gal	16c
Chalk		1½c
" Block		2½c
Dryer, Patent, Am'n	asst'd cans, 10½c; keg,	9c
Frostings		40c
Glue, White		33 @ 44c
" Sheet		30c
Glaziers' Points, Zinc		8c
Gum, Copal		36c
" Damar		24c
" Shellac, English		46c
" " dark		42c
Litharge, English		7½c
Mineral Wool	₩ ℔	1¾ @ 1¾c
Pumic Stone, selected Lumps		4 @ 6c
" powdered		2½ c
Putty, in bladders		3 c
" in bulk		2½c
Spirits Turpentine		47c
Whiting Spanish		1½c

Glass.

FRENCH WINDOW GLASS.

Prices current per box of 50 feet.

Single Thick.—Discount 45 to 40 %.

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$ 6.50	$ 5.75	$ 5.50	$ 5.25
11 x 14 to 16 x 24	7.25	6.75	6.25	6.00
18 x 22 to 20 x 30	9.25	8.50	7.75	7.25
15 x 36 to 24 x 30	10.25	9.25	8.25	
26 x 28 to 24 x 36	11.00	10.00	9.00	
26 x 36 to 26 x 44	11.75	10.75	9.50	
26 x 46 to 30 x 50	13.25	12.50	10.50	
30 x 52 to 30 x 54	14.00	13.00	11.25	
30 x 56 to 34 x 60	15.00	13.75	12.50	
34 x 58 to 34 x 60	15.50	15.00	13.25	
36 x 60 to 40 x 60	17.50	16.00	15.00	

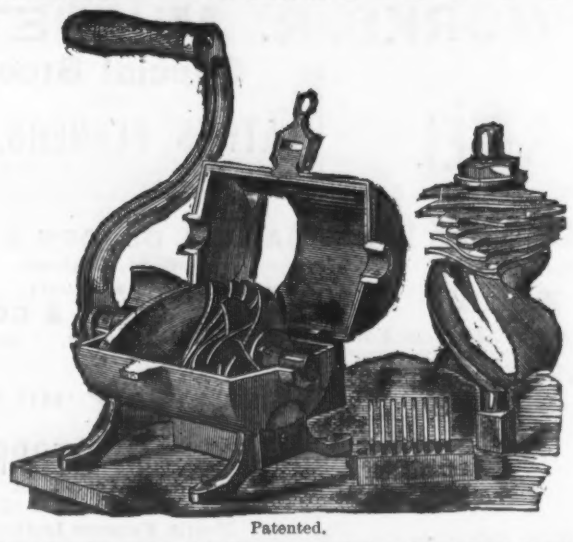
Double Thick.—Discount 50 to 50 and 5 %.

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$ 8.25	$ 7.75	$ 7.50	$ 7.00
11 x 14 to 16 x 25	10.00	9.25	8.75	8.25
18 x 22 to 20 x 30	12.75	11.75	10.75	
15 x 36 to 24 x 30	14.25	13.00	11.75	
26 x 28 to 24 x 36	15.25	13.75	12.50	
26 x 36 to 26 x 44	16.25	14.75	13.00	
26 x 46 to 30 x 50	17.50	16.75	14.25	
30 x 52 to 30 x 54	18.50	17.25	14.75	
30 x 56 to 34 x 60	19.50	18.25	16.25	
34 x 58 to 34 x 60	20.50	19.50	18.00	
36 x 60 to 40 x 60	23.00	21.00	20.00	

An additional 10 per cent. will be charged for Glass more than 40 inches wide. Any size over inches in length, and not making more than 81 united inches will be charged in the 81 united inches bracket

Gunpowder.

KIESER'S MEAT CUTTERS



Patented.

Are offered as a first-class cutter. The Knives are made from **Best Cast Steel.** The **Circular Knives** revolve **between a Comb** of **Permanent Knives** of **same gauge,** making a **Double Shearing Cut,** cutting **faster and finer** than any machine made. The arrangement of the Knives **expels all meats as cut.** Is an excellent **Spice Mill.**

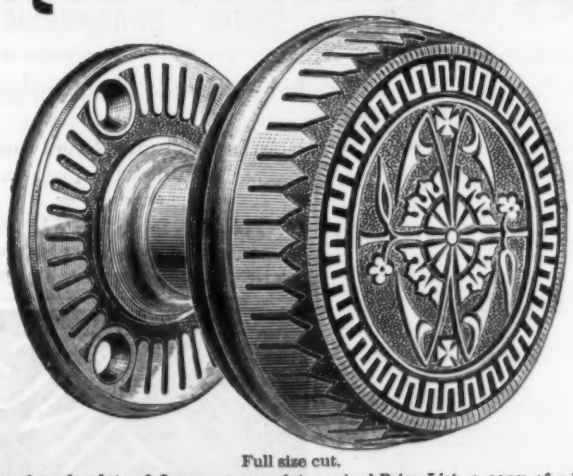
Also, Manufacturers of

BOSS MOLASSES GATES,
KIMBALL'S PATENT SHOVELS,
LOCKWOOD'S PATENT HOES.

KIMBALL SHOVEL CO., Sole Manufacturers,
Office, 67 GERMAN STREET, BALTIMORE. MD., U. S. A.

BRANFORD LOCK WORKS,

ANTIQUE PATTERN KNOBS.



Full size cut.

We have issued, under date of June 10, a complete revised Price List, a copy of which, with our 1879 Illustrated Catalogue, will be furnished to the trade free on application. Said Catalogue contains illustrations and descriptions of over 1000 different varieties of Door Locks, Knobs and Escutcheons.

MANUFACTORY AND OFFICE,

BRANFORD, CONN., U. S. A.

PATENT **Elliptic Spring Whistles** FOR **SPEAKING TUBES.**

Patented April 25th, 1872.

We call the attention of the trade to the whistle for speaking tubes, represented in above cut, as being superior, in a mechanical point of view, on account of the

PATENT ELLIPTIC SPRING,

which is much less liable to break and get out of order than the spiral spring usually used. These whistles being made entirely of metal, are very strong and durable. They are offered in a variety of styles at very reasonable prices. Send for illustrated circular and quotations.

We also invite an examination of our **PATENT REVERSIBLE DOOR LOCKS,** which by their peculiar construction, combine **simplicity, strength and durability.** In these Locks the combination of the Patent Lever and Spring renders the latch movement very easy and prompt in action.

Illustrated catalogues and price lists furnished on application.

TRENTON LOCK AND HARDWARE CO.,

Manufacturers of **Superior Building Hardware.** **Trenton, N. J.**

AGENTS.

JAMES M. VANCE & Co., 211 Market St., Philadelphia, Pa.; JAMES MARSHALL, 48 Warren St., New York.

R. J. ANDERSON, President. A. B. PARKER, Vice-Pres. JAS. A. VAN BRUNT, Sec'y & Treas.

NEW YORK WIRE AND WIRE ROPE CO.

Manufacturers of

WORKS:
South Brooklyn AND Mott Haven, N. Y.

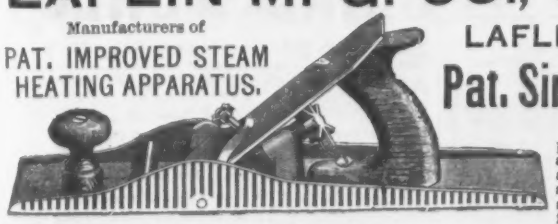
WIRE ROPE

New York Office:
23 Astor House.

WIRE, FURNITURE SPRINGS & UMBRELLA FRAMES.

LAFLIN MFG. CO., Westfield, Mass,

Manufacturers of
PAT. IMPROVED STEAM HEATING APPARATUS.



LAFLIN MFG. CO.'S
Pat. Single Iron Plane

Made of extra quality iron. A practical labor-saving tool. Cuts against the grain equally as well as with it. Can be adjusted instantly to cut a coarse or fine shaving, and excels any double iron plane ever produced.

PATENTS

303 Euclid Ave., Cleveland, O. | **TRACY, DYER & WILBER, Solicitors and Counsel in Patent Litigation** | 519 Seventh St., Washington.

Send for "ALL ABOUT PATENTS," 140 Pages—Free.

Office of NELSON LYON,

SOLE MANUFACTURER OF

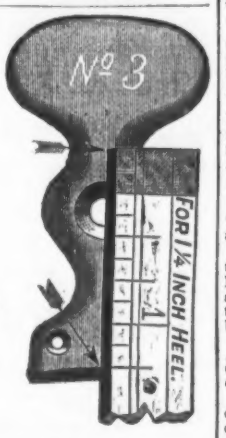
LYON'S PATENT

METALLIC

Heel Stiffeners.

Manufacturer of

BRUSHES,



NOS. 17 AND 19 GREEN ST., ALBANY, N. Y., Dec. 6, 1880.

All to whom it may concern, Take Notice:

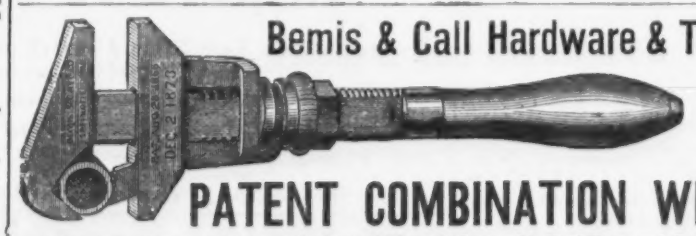
That my suit against **G. T. Fisher & Co., Detroit, Mich.,** for infringing my **Heel Stiffener Patent** was this day decided in my favor, and perpetual injunction granted against them.

NELSON LYON.

SEND for CATALOGUE and PRICES of HOUSEFURNISHING HARDWARE, MECHANICS' and GARDEN TOOLS, to

ENTERPRISE MFG. CO., Geneva, Ohio.

Bemis & Call Hardware & Tool Co.



This Wrench can be furnished with Briggs' Pat. Nut or Sleeve.

PATENT COMBINATION WRENCH.

These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, case-hardened throughout, and not only combine all of the superior qualities of our Cylinder or Gas Pipe Wrenches, but also all requisite Combinations of a regular Nut Wrench, thus making a combination which has no equal

For Circulars and Price List, address

BEMIS & CALL HARDWARE & TOOL CO., Springfield, Mass.

The Northup Window Spring

Holds top or bottom Sash firmly at any hight; locks them when closed. Where introduced the Hardware trade find a steady demand for it. Samples, in neatly-made working models for counter exhibition, sent free by

THE SECURITY BLIND FAST CO., 19 Calender St., Providence, R. I.

(See New York Wholesale Prices in *The Iron Age.*)

COXE BROS. & CO.,

Cross Creek Lehigh Coal.

The Purity and Strength of this Coal especially adapt it for the working of Iron and Metals.

GENERAL OFFICE, Room 12 Trinity Building, 111 Broadway, New York.

BRANCH OFFICES, { Chicago, Ill., 90 LaSalle Street. Philadelphia, 206 Walnut Place. Boston, 53 Kilby st.

E. B. & S. W. ELY, Agents, P. O. Box 262, N. Y.

TO NICKEL PLATERS.

American Nickel Works,
Camden, N. J., Aug. 1, 1880.

ANODES.—I am now prepared to supply **PURE ROLLED NICKEL ANODES** in any quantity.

These superior Anodes wear away in the solution evenly and completely, like rolled silver or copper plates, thus avoiding the vexation and loss caused by the crumbling and breaking of cast Anodes. They plate very evenly and regularly.

Though necessarily higher in price per pound, they are so much thinner (usual thickness 3-32 inch) that to furnish a tank of any given size costs but about half as much as if furnished with cast Anodes.

Though perfectly protected by my patent for Malleable or Rolled Nickel Anodes of Jan. 6, 1880, as well as by Dr. Fleimann's patent for making nickel malleable (of which I am sole and exclusive American licensee),

I make no charge of royalty for the use of these Anodes,

which are quite free from any patent claim of any other parties for Nickel Anodes.

SOLUTION.—In order to meet the wants of those who prefer to make their own solutions, I now make **NICKEL OXIDE** of high purity and easily soluble in any acid. It is better for this purpose than metallic nickel or nickel carbonate.

I also make and offer for sale Cast Nickel Anodes and Nickel-Ammonia Sulphate. Pure Grain Nickel always on hand. Malleable Nickel Castings made to order.

All these articles, being made with the greatest care from the ores of my own nickel mine, can be depended upon as of the highest quality and greatest uniformity.

ROLLED NICKEL ANODES.... **$2.50** per lb.
NICKEL OXIDE..... **1.50** "

JOSEPH WHARTON.
Post Office Address,
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WESTON DYNAMO-ELECTRIC MACHINE

NICKEL.

The rapid increase in the use of Nickel-Plating owing to the introduction of the Weston Machine and the very low price of nickel material, enables us to give greatly reduced estimates for complete outfits.

We are furnishing outfits specially adapted for Stove Work, giving a pure white deposit on plain or mat surfaces.

Outfits complete, with Dynamo-Electric Machine Tanks, Anodes, Solution, &c., &c., $250.

We beg to refer to the following Stove Manufacturers among 500 other houses using the Weston Machine: Richardson & Boynton, S. S. Jewett & Co., Fuller, Warren & Co., Perry & Co., Detroit Stove Works, Michigan Stove Co., Co-operative Stove Co., E. & C. Gurney, Hamilton & Toronto, and many others.

INFRINGEMENTS.

We call attention to infringements of the Weston Machine, in which Automatic Switches are used to prevent change of current. The Weston Co. are owners by grant or purchase of all forms of Automatic Switches for Plating Machines. The adoption of these machines will certainly lead to great loss to parties purchasing or using them.

CONDIT, HANSON & VAN WINKLE *Sole Agents* NEWARK, N.J. U.S.A.

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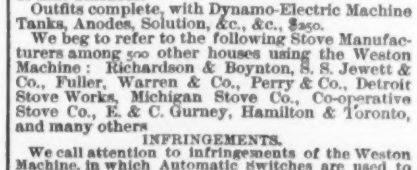

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Steam Pipe Casing,

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Established 1855. Send for pamphlet.

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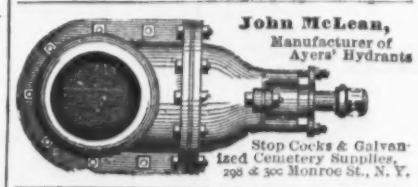

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Extra Mild Center Steel, special for Taps,

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See Page 3.

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BENJAMIN ATHA & CO.,

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And grades of Steel specially adapted for Lathe Tools, Chisels and Taps and Dies.

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Particular attention is paid to quality and temper for FILES, SAWS, EDGE TOOLS, TABLE and POCKET CUTLERY, TOOLS, TAPS and DIES; also for COLD ROLLED STEEL for CLOCK SPRINGS, CORSET CLASPS, &c.

A Large Assorted Stock of JOHN ROTHERY'S FILES always on hand.

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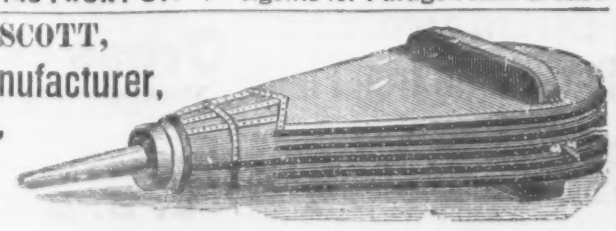

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Turns out at least **double work** by increased speed and feed, **and cuts harder metals** than any other Steel. Neither hardening nor tempering required.

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SAMUEL OSBORN & CO.,

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Nos. 11 & 13 Oliver Street, BOSTON.

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BLACK LEAD STOPPERS,

FOR

Bessemer Converters and Siemens-Martin Furnace Ladles.

All the regular sizes in stock, with Nozzles to fit each size. Special sizes or shapes made to order from sample or drawing.

Black Lead Crucibles, all kinds and sizes.

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"Benzon" Homogeneous Plates

For Boilers, Fire-boxes, &c.

Axles, Crank Pins, Spring Steel,

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The only one made on scientific principles. *It runs dry, in water, or in oil.* Can be made hard enough for the hardest wood, and soft enough for the most delicate tools. It heats less than any other wheel. It will cut Iron, Steel, Brass, Silver, Copper, Marble, Granite and Wood; also, Rubber, Paper and Iron Rolls. Address

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Manufacturers of
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Send for quotations and samples.

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Terms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.

Anvils.
Peter Wrights, ℘ lb ... 10¾c
Over 250 lbs ... 11c
Eagle (American) ... 10c ℘ lb—dis 20 %

Apple Parers.
Keystone Centennial, 1875 ... $4.25
" " 1877 ... 5.00
Reading No. 72 ... 5.00
" No. 74 ... 6.00
" No. 75 ... 7.00
" No. 78 ... 7.50
Rotary Peach Parers ... 13.50
Lots of 10 to 25 dozen special prices.

Axes.
Hunt's Kentucky and Yankee ... per doz $11.00
Mann's Red Warrior ... " 11.00
Richland Chief ... " 10.00
Beveled Axes ... add 50c " net
Double Bit Axes ... net " 22.00

Augers and Auger Bits.—New List January 1.
Bates' Nut Augers ... dis 40 %
Cook's Augers ... dis 40&10 %
Watrous' Ship Augers ... dis 15 %
Benjamin Pierce Auger Bits ... dis 35 %
Griswold Auger Bits ... dis 40 %
Cook's " ... dis 40&10 %
Jennings' " ... dis 15, 10&10 %
Bonney's Pat. Hol. Augers, list $48 ℘ doz. .dis 25&10 %
Stearns' Pat. Hol. Augers, list $48 ℘ doz ... dis 20&10

Balances.
Light and Common ... dis 15&10 %

Bells.
Bevin Bros. Mfg. Co. Light Hand Bells ... dis 60&10 %
Swiss Pattern Hand Bells ... low list dis 10&10 %
Connell's Door Bells ... dis 35 %
Gt. Western & Kentucky Cow, new list ... dis 50 %

Bolt and Rivet Clippers.
Chambers' No. 1. for ⅜ bolt ... each, $7.50 }
" No. 2, " ½ " ... " 9.00 } dis 15 %
" No. 3. " ⅝ " ... " 12.00 }

Boring Machines.
Upright, without Augers ... List 5.50 } dis 40 %
Angular, without Augers ... " 6.75 }

Bolts.—Eastern Carriage Bolts ... dis 70&10 %
Philadelphia " ... new list dis 60&10 %
Stanley, Wrought Shutter ... dis 50&10 %

Braces.—Barber's ... dis 40 %
Backus ... dis 60 %
Spofford ... dis 50&5 %
American Ball ... dis 40&10 %

Butts.—Cast Fast Joint, Narrow ... dis 40&10 %
" " Broad ... dis 40&10 %
Cast Loose Joint, Narrow ... dis 50&10 %
" " Broad ... dis 50&10 %
" Acorn. Loose Pin ... dis 50&10 %
" " Jap'd ... dis 55&10 %
" Mayer's Loose Joint ... dis 55&10 %
Wrought Loose Pin ... dis 55&10 %
" Table Hinges and Back Flaps ... dis 45&10 %
" Narrow, Fast ... dis 45&10 %
" Loose Joint ... dis 55&10 %

Blind Butts.
Parker ... dis 70 %
Clark ... dis 60, 10&10 %
Shepard ... dis 60, 10&10 %
Lull & Porter ... dis 60&10 %
Huffer's ... dis 50 %

Chains.—German Halter and Coil. new list Oct. 22, 1879 ... dis 40&10 %
Galvanized Pump ... ℘ lb 10c net
Best Proof Coil Chain—English.

℘ lb	12	10	8½	7½	7¼	7 gold
	3-16	¼	5-16	⅜	7-16	½ in.

Chisels.—Socket Framing ... dis 65&10 %
Socket Firmer ... dis 65&10 %
Butcher's ... $5.00 to £ gold

Casters.—Bed (new list July 1, 1880,) ... dis 30&10 %
Plate ... dis 30&10 %

Coffee Mills.—Box and Side, new list Jan. 1, 1880 ... dis 35 %
Enterprise ... dis 20 %

Cutlery.—Walden Pocket ... new list net
Landers, Frary & Clark, J. Russell & Co., Lamson & Goodnow Mfg. Co. and Meriden Cutlery Co., Manufacturers' prices net.

Drawing Knives.
Hart Mfg. Co.'s ... dis 65&10 %
Adjustable Handle ... dis 15 %

Fry Pans.
Tinned ... dis 45 %

℘ doz.	$3.50	4.00	4.50	5.00	5.50	6.50	7.50	9.00	10.00
No.	0	1	2	3	4	5	6		8

Burnished ... dis 60 %

℘ doz.	$3.00	3.75	4.25	4.75	5.25	6.00	7.00	8.00	9.00
No.	0	1	2	3	4	5	6	7	8

Files.
Nicholson ... dis 30 %
Disston ... dis 30 %
Butcher ... $4.50 £
Spencer ... $4.50 @ 4.75 £
E. M. Boynton, new list ... 25 %

Fluting Machines.
Eagle—3½ in. roll ... each, $2.15 } dis 10 %
—5½ in. roll ... " 2.85 }
Crown—4½ in. roll ... " 3.50 }
" —6 in. roll ... " 4.80 } dis 10 %
" —8 in. roll ... " 6.50 }
Geneva Fluter ... dis 20 %
Favorite com Fluter & Sad Iron ... ℘ doz $10.50 net

Hammers.
Yerkes & Plumb's, new list ... dis 30 %

Handles.
Boynton's Pat. Saw Handles ... 35c per pair net.

Hatchets.
Yerkes & Plumb, new list ... dis 30 %
Hunt ... dis 15&5 %

Hinges.
Strap and T ... dis 50&10 %

Horse Nails.

	Nos. 5	6	7	8	9	10
Ausable	30	27	25	24	23	22
" Pol'ed & P't'd and Blued and Pointed.	31	28	2	25	24	23
Globe ... New list.	28	25	23	22	21	20
Clinton		22	20	19	18	17
" Polished & Pointed		23	21	20	19	18

Porter, all sizes ... ℘ lb 15c. net
Discount on Ausable and Clinton, 10 %; Globe, 10 %

Locks and Knobs.
Branford ... dis 45&2 %
Gaylord Cabinet ... dis 10&2 % cash
American Padlocks ... dis 40 &2 % cash
Scandinavian Padlocks ... dis 50 %

℘ doz.	$5.00	5.50	6.50	7.50	8.50	10.00	12.50	dis 60 %
No.	57	58	59	60	61	62	63	
℘ doz	$18.00	26.00	33.00					dis 60 %
No.	64	65	66					

Lanterns.
Nail City ... ℘ doz, $9.00 net
Square Candle and Oil ... ℘ doz
Tubular ... No. 0, $8.65; No. 1, $10.15 ℘ doz net
Globes, 35 cents extra per doz. net.

Lawn Mowers.—Pennsylvania ... dis 30&10 %
Philadelphia ... dis 30&10 %
Excelsior ... dis 30&10 %

Lawn and Garden Pumps.
Holland Patent ... List $5.00 dis 10 %

Mattocks.
Long and Short Cutter ... new list
Pennsylvania Pattern ... per doz

Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets ... dis 20 %
Stebbins' Gates ... dis 50&10 %
Lincoln's " ... dis 50&10 %
Landers, Frary & Clark's Petroleum ... dis 20&10 %
Brass Liquor Cocks, new list Jan. 1 1880 ... dis 40 %
Cork Lined " ... dis 70 %

Meat Cutters.—Penns'vania Meat Cutter. dis 40&10 %
Dixon's ... dis 35 %
Woodruff ... dis 35 %
Stowe ... dis 30 %
Hale's ... new list, dis 40, 2&10 cash
American ... dis 25 %
Stuffers ... dis 35 %
Enterprise Stuffers ... dis 20 %

Planes.—Ohio Tool Co ... dis 25 % }
Scioto ... dis 30 % } 7½ % cash
Auburn ... dis 25 % } in 10 days.
New York Tool Co ... dis 50 % }
Bailey ... dis 20&10 %

Plane Irons.—Ohio Tool Co ... dis 10&5 %
Butcher's ... £, $4.50

Plumbs and Levels.
Stanley's Adjustable ... dis 60&10 %
" Non-Adjustable ... dis 60&10 %

Picks.—New list.
Pumps.—Bickford ... $5.00, dis 10 %
Rules.—Stanley Boxwood ... dis 60&10 %
Stanley Ivory ... dis 40&10 %
Steelyards.—Hart's Pattern ... dis 30&10 %

℘ doz	$14.50	17.75	21.00	26.50	31.00	35.50
Lbs	50	100	150	200	250	300

American Pattern ... dis 30&10 %

℘ doz	$8.00	10.25	13.75	15.60	16.75	19.50
Lbs	50	100	150	200	250	300

Squares.
Steel and Iron ... dis 50 %; full case, dis 50&10 %
Try Squares, Stanley ... dis 45&10 %
Disston's Try Squares ... dis 52½ %

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened ... ℘ doz $9.00 net
Clipper No. 10, Bronzed Blade, Boxed and Sharpened ... ℘ doz $8.50 net
Clipper No. 5, Painted Red, Boxed and Sharpened ... ℘ doz $8.00 net

Saws.—Disston's Hand, Panel and Rip ... dis 20 %
Disston's Circular ... dis 35 %
" Cross-Cut No. 2, Plain Tooth ... dis 25 %
" Patent Tooth ... dis 25 %
" Champion Tooth ... dis 25 %
Boynton's Lightning Cross Cut, new list ... dis 20 %
" One Man, all lengths ... dis 20 %
" Billet Webs, 30 inch ... dis 25 %
" Lightning Buck Saws, cross bar ... dis 25 %
" " Hand, Panel and Rip ... dis 25 %

Shovels and Spades.
Rowland ... dis 40&10 %
Oliver Ames & Sons, new list ... dis 10 %
Griffith ... dis 40&10 %

Sad Irons.—4 to 10 lbs ... ℘ lb 3½c
Mrs. Potts' Patent ... dis 30 %

Stone.—Arkansas Oil Stone ... ℘ lb $2.00 net
Washita Extra ... ℘ lb 27c net
" No 1 ... " 18c
" No. 2 ... " 15c
" Slips ... " 36c
" Axe ... " 18c net
Turkey Oil Stone No. 1 ... ℘ lb $1.00 net
Hindostan Oil Stone No. 1 ... ℘ lb 6c }
" Axe Stone ... " 8c } dis 30 & 10 %
" Slips ... " 10c }

Screws.
Flat Head Iron ... dis 45 %
" Brass ... dis 45 %
Round Head Brass ... dis 30 %
" Iron ... dis 40 %

Spoons.
Plated ... dis 33⅓&5 %
German Silver ... dis 25&10 %
Britannia, Boardman's ... dis 60 %
" Parker's ... dis 60 %
Tinned ... dis 10 %

Springs.—Torrey ... ℘ doz $2.10 10 %
Philadelphia ... 5 in., $5.00; 8 in., $7.00 ℘ doz. dis 25 %
Chatfield No. 1, $2.75; 2, $3.25; 3, $5.00 ℘ doz, dis 33⅓ %
Gem Coil No. 1, Large Jap'd ... ℘ doz $3.50 }
" No. 2, Medium Jap'd ... " 2.50 } net
" No. 3, Small Jap'd ... " 2.00 }

Stocks and Dies ... dis 10&5 %

Stove Polish.—Gem ... ℘ gross, $4.50, dis 5 %
Dixon ... " 5.75 net
Onyx ... " $4.00 @ 4.25 net

Tacks, Brads, &c ... dis 20&10 %
Shoe Nails—4-8, 9c; 3½-8, 10c ℘ lb ... 10 %
Double Pointed Tacks ... dis 40&5 %

Traps.
Genuine Oneida—Newhouse ... dis 30 %
Im. Oneida—Newhouse list, first qual ... dis 55 %

Vises.—Solid Box, Trenton new list ... dis 25 %

Wrenches.—Agricultural ... dis 60&10 %
Coes' Genuine ... dis 50 %
" " Mechanics' ... dis 50&10 %
" " Mall. Bar ... dis 70 %
Philada. Tool Co., Duplex ... dis

Wire.
Bright or Ann'd, No. 0 to 18 ... dis 45 to 50 %
" No. 19 to 26 ... dis 52½ to 57 %
" No. 27 to 36 ... dis 60 to 65 %
Coppered, 0 to 18 ... dis 40 to 45 %
Tinned Broom Wire ... dis 47½ to 50 %
Galvanized No. 7 to 18 ... Market List, dis 35 to 37½ %

Wringers.
Peerless No. 2½ ... $60.00
" " 2 ... 63.00
Universal, No. 2½ ... 60.00
" " 2 ... 63.00
Novelty, No. 10 ... 60.00
" " 2 ... 63.00

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Merchant Iron.

Terms.—Note or acceptance at 60 days, with current rate of exchange on New York, or a discount of 2 per cent. for cash, if remitted within 10 days from date of invoice.

Flat Bar.
1¼ to 4 by ⅜ to 1 inch ... 2.5c
4¼ to 6 by ⅜ to 1 " ... 2.6c
1¼ to 6 by 1⅛ to 1¼ " ... 2.9c
1¼ and 1⅜ by ⅜ to ¾ " ... 2.6c
1 and 1⅛ by ⅜ to ¾ " ... 2.7c
⅝, ¾ and ⅞ by ⅜ to ⅝ inch ... 2.9c

Rounds and Squares.

1 to 1⅞	2.5c	⅝ to 9-16	2.7c
2 to 2⅝	2.7c	½ to 7-16	2.9c
2¾ to 3¼	3.0c	⅜	3.1c
3⅜ to 4	3.5c	5-16	3.3c
4¼ to 5	4.0c	¼	3.5c
¾ to ⅞	2.6c	3-16	5.5c

Oval Iron.

⅞ to 1⅛	2.9c	½	3.3c
⅝ to ¾	3.1c	⅜	3.7c

Half Oval and Half Round.

⅞ to 1¼ inch	3.2c	½ inch	4.0c
⅝ to ¾ "	3.7c	⅜ "	5.5c

Horse Shoe.
⅝ to 1⅛ by 5-16 to ⅞ inch ... 3.5c

Wagon Box Iron.
⅞ inch, Nos. 13 and 14 ... 3.7c
⅞ " " 11 and 12 ... 3.5c
¾ " " 13 and 14 ... 4.0c
¾ " " 11 and 12 ... 3.8c
⅝ " " 13 and 14 ... 4.4c
⅝ " " 11 and 12 ... 4.1c

Heavy Bands.
3½ to 6 by ¼ and 5-16 inch ... 2.7c
1⅞ to 3¼ by ¼ and 5-16 " ... 2.7c
1 to 1⅞ by ¼ and 5-16 " ... 2.8c
¾ to ⅞ by ¼ and 5-16 " ... 3.0c
⅝ and ¾ by ¼ and 5-16 " ... 3.5c

Light Bands.
1¼ to 6 by ⅛ to 3-16 ... 3.0c
1½ to 6 by Nos. 11 and 12 ... 3.1c
1 to 1⅜ by ⅛ to 3-16 ... 3.1c
1 to 1⅜ by Nos. 11 and 12 ... 3.2c
⅞ and 13-16 by ⅛ to 3-16 ... 3.4c
⅞ and 13-16 by Nos. 11 and 12 ... 3.5c
¾ and 11-16 by ⅛ to 3-16 ... 3.7c
¾ and 11-16 by Nos. 11 and 12 ... 3.8c
⅝ and 9-16 by ⅛ to 3-16 ... 4.0c
⅝ and 9-16 by Nos. 11 and 12 ... 4.1c
½ inch by ⅛ and 3-16 ... 4.3c
½ inch by Nos. 11 and 12 ... 4.4c

Hoop Iron.
1¼ to 4, Nos. 13, 14 and 15 ... 3.3c
1¼ to 2, Nos. 16, 17 and 18 ... 3.4c
1¼ to 2, No. 19 ... 3.5c
1¼ to 2, No. 20 ... 3.6c
1¼ to 2, No. 21 ... 3.7c
1¼ to 2, No. 22 ... 3.8c
15-16, 1, and 1⅛, Nos. 13, 14 and 15 ... 3.5c
15-16, 1, and 1⅛, Nos. 16, 17 and 18 ... 3.6c
15-16, 1, and 1⅛, Nos. 19 and 20 ... 3.7c
15-16, 1, and 1⅛, No. 21 ... 3.8c
15-16, 1, and 1⅛, No. 22 ... 3.9c
⅞, Nos. 13, 14 and 15 ... 3.7c
⅞, Nos. 16, 17 and 18 ... 3.8c
⅞, Nos. 19 and 20 ... 3.9c
⅞, No. 21 ... 4.0c
⅞, No. 22 ... 4.1c
13-16, Nos. 13, 14 and 15 ... 3.9c
13-16, Nos. 16, 17 and 18 ... 4.0c
13-16, Nos. 19 and 20 ... 4.1c
13-16, No. 21 ... 4.2c
13-16, No. 22 ... 4.3c
¾, Nos. 13, 14 and 15 ... 4.0c
¾, Nos. 16, 17 and 18 ... 4.1c
¾, Nos. 19 and 20 ... 4.2c
¾, No. 21 ... 4.3c
¾, No. 22 ... 4.4c
11-16, Nos. 13, 14 and 15 ... 4.2c
11-16, Nos. 16, 17 and 18 ... 4.3c
11-16, Nos. 19 and 20 ... 4.4c
11-16, No. 21 ... 4.5c
11-16, No. 22 ... 4.6c
⅝, Nos. 13, 14 and 15 ... 4.4c
⅝, Nos. 16, 17 and 18 ... 4.5c
⅝, Nos. 19 and 20 ... 4.6c
⅝, No. 21 ... 4.7c
⅝, No. 22 ... 4.8c
⅝, No. 23 ... 4.9c
9-16, Nos. 13, 14 and 15 ... 4.6c
9-16, Nos. 16, 17 and 18 ... 4.7c
9-16, Nos. 19 and 20 ... 4.8c
9-16, No. 21 ... 4.9c
9-16, No. 22 ... 5.0c
9-16, No. 23 ... 5.1c
½ inch, Nos. 13, 14 and 15 ... 4.8c
½ " Nos. 16, 17 and 18 ... 4.9c
½ " Nos. 19 and 20 ... 5.1c
½ " No. 21 ... 5.2c
½ " No. 22 ... 5.3c
½ " No. 23 ... 5.4c

The prices under Hoop Iron do not apply to Cotton Ties.

1-10c per lb. extra will be charged for each gauge lighter than the lightest indicated.

1-10c per lb. extra will be charged for cutting hoops to specified lengths.

Barrel Hoops.
1¼ to 2 in., cut to length.
9 to 11 lbs, per set of 6 hoops ... 3.5c
8 lbs. and less than 9 lbs. per set of 6 hoops ... 3.6c
Less than lbs. per set of 6 hoops ... 3.8c

Extras for Cutting to Length all Preceding Iron.
All Iron, including Tire ... 1.10c

Tank Iron.
No. 9 and heavier ... 3.3c
Plow Slabs ... 3.5c
" Wings ... 3.8c

Sheet Iron.

	Common.	Charcoal.	Juniata.
No. 10 to 14	3.5c	5.00	6.5c
No. 15 to 17	3.8c	5.3c	6.8c
No. 18 to 21	4.1c	5.6c	7.1c
No. 22 to 24	4.3c	5.8c	7.3c
No. 25 & 26	4.5c	6.00	7.5c
No. 27	4.7c	6.20	7.7c
No. 28	5.1c	6.60	8.1c

All sheets No. 18 and lighter, over 30 inches wide, not less than 2.10c extra.

Wood's Patent Planished Sheet.
1st quality (A) ... 12c | 2d quality (B) ... 10½c

Galvanized Iron—Juniata.

Nos. 14 to 20	12c	No. 27	15c
Nos. 21 to 24	13c	No. 28	16c
Nos. 25 and 26	14c	No. 29	18c

Current discount to jobbers, 1st quality, 27½ %; 2d quality, 37½ %.

Coal Screen Iron.
4¾ by ⅝ by 5-16 ... 2.0c | 1 by ⅝ by 5-16 ... 3.5c

Angle Iron.
2½, 3, 3½ and 4 inch ... 3.3c
1⅞, 1¾, 2 and 2¼ inch ... 3.3c
1½ inch ... 3.4c
1 " ... 3.6c
1½ by 1 inch, for Plow Handles ... 3.8c
1½ by ¾ " " " ... 3.8c
1⅜ by ¾ " " " ... 3.9c

T Rail.

8 lbs. to the yard	2.9c	20 lbs. to the yard	2.9c
12 " "	2.9c	28 " "	2.9c
16 " "	2.9c	40 " "	2.9c

Splice Joints for 12, 16 and 20-lb. Rail, 40c each; 28 and 30-lb. Rail, 50c each; 40 lb., 60c each.
3½ by ⅜ and ½ Spikes for 20 and 28-lb. Rail ... 4½c
2½ and 3 by ⅜ " " 12 and 16-lb. " ... 4¾c
2¼ by 5-16 " " 8-lb. Rail ... 5¼c

Flat Rails.—Punched and Countersunk.
1¼ to 2 by ⅜ to ⅝ inch ... 3.0c
1⅛ by ⅜ and 7-16 inch ... 3.2c
1½ by ⅜, 7-16 and ½ inch ... 3.5c

Juniata Nail Rods ... 6.5c
Norway " ... 8.0c
Guard Iron, ⅝x⅝x⅝ and ⅝x⅝x⅜ ... 4.0c
" ⅜x⅝x9-16 and ½x⅝x⅜ ... 4.2c
Drag Bars ... 3.3c
Dropper Bars ... 3.8c
Cylinder and Landside Iron ... 3.2c
Plow Beam Iron ... 3.0c

Nails.
10d to 60d ... $2.85

Best Quality Refined Cast Steel.
Square, Flat, Octagon and Round.
⅜ to 2 inches, inclusive ... 13 c
5-16 and 2⅛ to 3 inches ... 14 c
¼ and 3⅛ to 4 " ... 15 c
7-32 and 4⅛ to 5 " ... 16 c
3-16 and 5⅛ to 6 " ... 19 c
5-32 inch ... 23 c
⅛ inch ... 31 c
Oil Well Steel Forgings ... 21½c
No grade of Crucible Tool Steel shall be sold for less than above prices.

Machinery Steel.

	Crucible.	Bessemer & Open Hearth.
Ordinary Sizes, ⅜ to 2 inch Round	7½c	6c
5-16 and 2⅛ to 3 inches	8½c	7c
¼ and 3⅛ to 6 "	9½c	8c
7-32 inch	10½c	9c
3-16 "	12½c	11c

Square, Flat and Octagon, ½c extra throughout the list.
Cut to specified lengths, ½c extra.

Hammer Cast Steel.
2 inches and under ... 8½c
Above 2 inches ... 9½c

Sheet Steel.—Crucible.

	Best.	2d Qual.	3d Qual.	Bessemer & Open Hearth.
To 21 gauge	13c	11c	9c	6½c

1c. extra for each additional gauge.
Cut to multiples or specified lengths, ½c. extra.

Miscellaneous Cast Steel.
Auger and Auger Bit ... 8½c
Axle Steel for carriages and wagons ... 8½c
Frog Points and Plates ... 10c
" Side Bars ... 8c
Pick, plain ... 9c
" and Mattock, beveled ... 9c
Skate Steel ... 8½c
Table Cutlery ... 9c
Pike and Cant Hook ... 9c
Coal and Granite Wedge ... 9c
Roller ... 7½c
Spindle, subject to Machinery classification ... 8½c
Trap Spring Steel ... 9½c
Forged Crank Pins and Lathe Spindles ... 10½c
Piston Rods, plain ... 8c
" forged to shapes ... 10½c
Slide Bars, plain ... 8c
" forged to shapes ... 10½c

Crucible, Open Hearth or Bessemer.
Boiler, Fire-Box and Flue Sheets, not less than 3-16 thick ...
Boiler, Fire-Box and Flue Sheets, not less than ⅛ thick ...
Circulars and semi-circulars, when ordered separately ...
Smoke Stack, to shape ...
Locomotive Tank Steel ...

File Cast Steel.
Square, Round, Half Round and Flat Bastard, 8-inch and over ... 9c
Mill Saw, 8-inch and over ... 9½c
Taper, 3½-inch and over ... 10½c
Horse and Shoe Rasp ... 9½c

Spring Cast Steel ... 7½c
Spiral and Taper, cut to lengths ... 8c

Tire Cast Steel.
1x¼ and over ... 8c
1x3-16, ¾x3-16 and ¼ ... 8½c
1 and 13-16x⅛ and 5-32, ¾x3-16 and 5-32 ... 9c
¾ and ⅝x⅛ and 5-32 and 12 g ... 9½c
Solid Safe Cast Steel ... 7½c

Agricultural Implement Cast Steel.
Fork and Rake, Crucible ... 8½c
Horse Rake Steel, cut to lengths, Crucible ... 9 c
Hoe, Crucible ... 8 c
Corn Stalk Cutter, beveled ... 9 c
Beveled Hoe and Shovel Steel in Bars ... 9 c
Crucible Plow Steel in slabs ... 8½c

Bessemer and Open Hearth.
Spring ... 5½c
" spiral and taper, cut to lengths ... 6½c
Tire, 3-16 thick and above ... 5½c
Toe Calk ... 5½c
Plow ... 5½c
Axle Billets ... 5c
Sleigh Shoe ... 5c
Cutter Shoe, cut to lengths and tapered ... 6½c
Scythe Back Steel ... 5c
Grain Drill Bars ... 8½c
" Points ... 9½c
Rolling Coulter Blanks, cut and punched ... 10½c
Thrasher Steel ... 5½c
" Teeth ... 6½c
Rolled Hammer Billets ... 4½c

Where Bessemer or Open-hearth Steel can be used in place of Crucible, the difference in price shall not be greater than 1c. per lb., except where especially provided in the list.

Terms.—Four months; 3 per cent. discount for cash, if remitted within 30 days.

Rolls and Castings.
Furnace, Floor and Straightening Plates ... 2½c
Housings and Castings not otherwise specified ... 3 c
Guide Plates ... 3½c
Spindles and coupling boxes ... 3 c
Sand Rolls and Pinions, large size ... 3 c
" " small size ... 3½c
Pipe Mill Castings ... 5 c
Rolling Mill Castings under 50 lbs ... 4 c
Spur and Bevel Wheels, large ... 3¾c
" " small ... 4½c
Pulleys up to 30 inches ... 4¾c
" over 30 inches ... 4¼c
Engine Castings, light ... 4½c
" " heavy ... 4 c

Chilled Rolls.
6 to 7 in. diam., 7 to 20 in. long ... 5½c
8 to 15 in. " 8 to 40 in. " ... 5½c
25 to 24 in. " 15 to 72 in. " ... 5 c
14 to 31 in. " 72 to 108 in. " ... 5 c

White and Red Lead.
Strictly Pure White Lead in Oil, in kegs, in lots of 500 lb and over, 9c; less than 500 lb, 9½c in 25 and 50 lb Tin Pails, ½c. ℘ lb over keg price; 12½ lb Tin Pails, 1c ℘ lb over keg price; assorted, 1 to 5 lb, 100 lb Cases, 12c.
Dry White Lead.. less than 500 lbs., 8¾c; over 500 lbs. 8¼c
Orange Mineral, genuine, in kegs, 10c; in barrels, 9 c
Red Lead, very brilliant, " 8c; " 7½c
Litharge (Potter's Lead) " 8c; " 7½c
Freights equalized with all points.
Terms: Note at sixty days, or if paid within 15 days from date of invoice, a discount of 1½ per cent. will be allowed, but not otherwise.

Window Glass.
Per Box of 50 Feet.—Discount 60&10 % on single strength, 65&20 % on double.

Size.	AA.	A.	B.	C.
Single Strength.				
6 x 8 to 10 x 15	$8.25	$7.50	$7.00	$6.50
11 x 14 to 16 x 24	9.25	8.50	8.00	7.25
18 x 22 to 20 x 30	10.75	9.75	8.75	7.75
15 x 36 to 24 x 30	12.25	10.75	9.00	8.50
26 x 28 to 24 x 36	13.00	11.50	9.75	9.00
26 x 36 to 26 x 44	14.50	13.25	10.75	9.50
26 x 46 to 30 x 50	15.00	14.00	11.25	10.50
30 x 52 to 30 x 54	16.00	14.50	12.00	
30 x 56 to 34 x 56	17.25	15.50	13.50	
34 x 58 to 34 x 60	18.25	17.25	15.00	
30 x 60 to 40 x 60	20.75	18.75	17.25	
Double Strength.				
6 x 8 to 10 x 15	12.75	11.75	10.75	10.00
11 x 14 to 16 x 24	14.50	13.25	12.50	11.25
18 x 22 to 20 x 30	17.25	15.75	14.00	
15 x 36 to 24 x 30	19.75	17.25	14.50	
26 x 28 to 24 x 36	21.00	18.50	15.75	
26 x 36 to 26 x 44	23.25	21.25	17.25	
26 x 46 to 30 x 50	24.00	22.50	18.00	
30 x 52 to 30 x 54	25.75	23.25	19.25	
30 x 56 to 34 x 56	27.75	25.00	21.75	
34 x 58 to 34 x 60	29.25	27.75	24.00	
30 x 60 to 40 x 60	33.25	30.00	27.75	

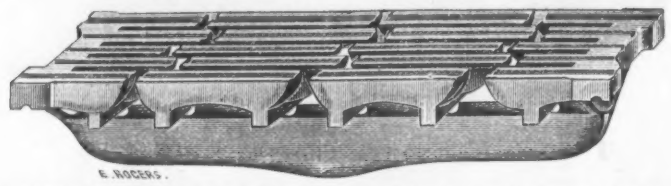
An additional 10 per cent. will be charged for all glass more than 40 inches wide. All sizes above 52 inches in length and not making more than 81 united inches, will be charged in the 84 united inches bracket.

DAVID S. CRESWELL,

816 Race Street, - - - - - PHILADELPHIA, PA.,

Manufacturer of

W. C. WREN'S PATENT GRATE BAR.



This Grate Bar consists of short parallel bars for carrying the coal, mounted above a long supporting bar, extending across the furnace by short transverse plates, holding the short bars, which sustain the heat so far above the supporting bar that it is kept comparatively cool, and is not, therefore, liable to warp, bend or burn. The bars which are subject to the heat, being made in short sections, do not strain the supporting bar. The short bars break joints at the meeting ends to prevent a straight open space across the whole; also to guide the rake used by firemen in cleaning the furnace better than they otherwise would.

We therefore claim the following advantages over other grate bars offered for sale:

1. Great saving in fuel.
2. Such construction as will equalize all strain resulting from expansion and contraction, thus avoiding warping, and thereby insuring long service.
3. Thorough combustion of fuel, owing to the large air spaces exposed.
4. Bars will not weigh more in proportion than the ordinary bar, and in addition to a saving of 25 per cent in fuel, will last much longer than any other bar in use.

The **WREN GRATE BAR** is in use at the works of the Atlantic Refining Co. and other prominent concerns.

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Patent Friction Hoisting Engines

For Mines, Quarries, Dock Building, &c.

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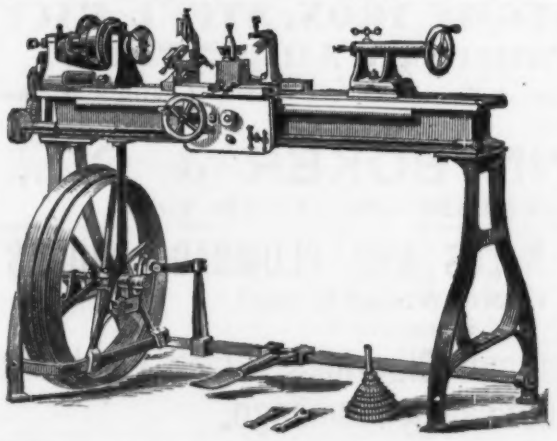
Correspondence solicited.



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View of Rock Breaker.

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ROCK & ORE BREAKERS,

(THE "BLAKE" STYLE),

designed for breaking to small pieces and one-third dust all kinds of hard and brittle substances, such as **Quartz, Emery, Gold and Silver Ores, Coal, Plaster, Iron, Copper and Lead Ores**; also, **Stone** for making **Concrete and Railroad Ballast.**

Premium of Excellence, American Institute Fair, 1879.

Twenty years of practical test, at **Home** and **Abroad**, has proven this machine to be the best one ever invented for the purpose. Mr. S. L. MARSDEN, for the past fifteen years connected with the manufacture of these machines, has charge of this department of our works, and will personally superintend their erection within a reasonable circuit. **Chilled Rolls and Rolling Mill Machinery; Power Presses,** single and double acting; also, **Hammers,** Drops and Lifters; **Shafting, Pulleys and Hangers.**

Norris Patent Pulley Cover.

This Cover is made with alternate layers of the best Elastic Rubber and Canvas, four layers of rubber and three of canvas. The canvas is cut straight, so as to give it the greatest strength possible. On one edge of the cover is a *lip*, one-half inch wide, and on the other a *rebate* that the lip will fill when the cover is wound *spirally* around the pulley. This *lip* and *rebate* is to be locked together across the face of the pulley by cementing, so that the cover becomes a whole one. The cover is wound *spirally* on until the whole face is covered, and riveted on the edges, as can be seen in the cut. *It is not like rubber belting*, being made with as much *surface* elasticity as possible. ***It can be put on by anyone, on any size Pulley,*** without taking the shafting down or moving any part of it. Cement and rivets are sent with each Cover.

Circulars on application.

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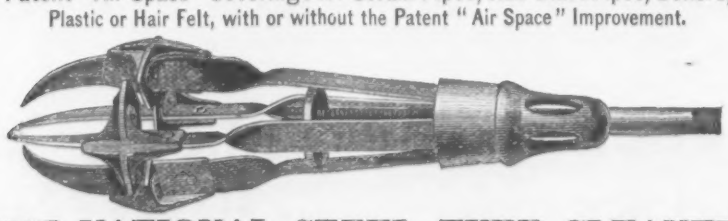

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Saves its cost every time it is used.

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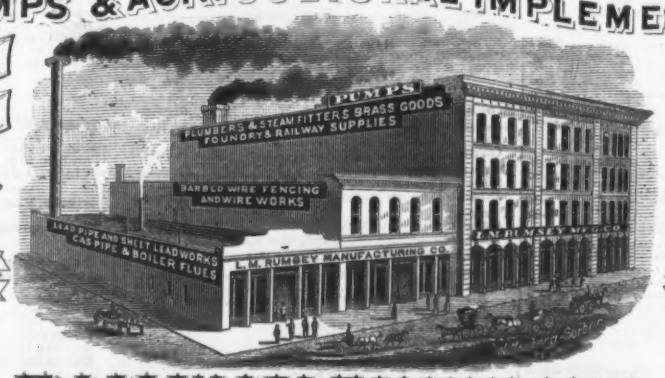

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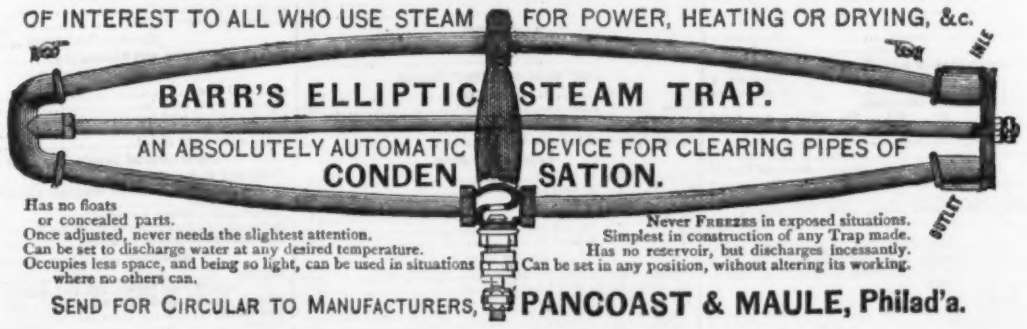

Has no floats or concealed parts.
Once adjusted, never needs the slightest attention.
Can be set to discharge water at any desired temperature.
Occupies less space, and being so light, can be used in situations where no others can.

Never FREEZES in exposed situations.
Simplest in construction of any Trap made.
Has no reservoir, but discharges incessantly.
Can be set in any position, without altering its working.

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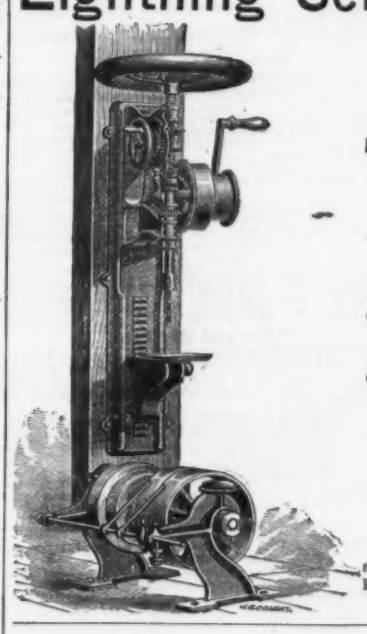

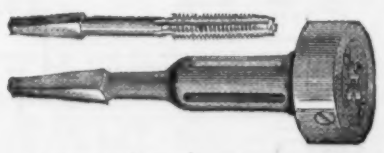

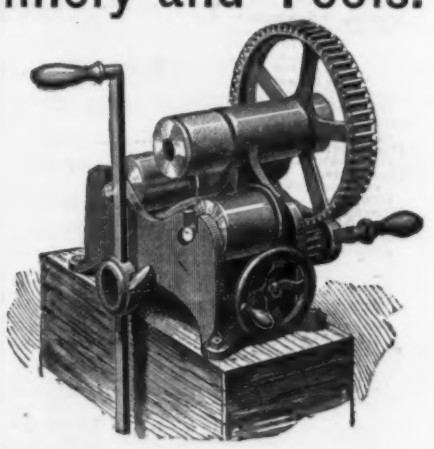

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Special Screw Plates for the use of Model Makers, Carriage Makers, Blacksmiths and others. Taps, Dies and Reamers for use with the Bit Brace. Tire Bolt Wrenches, Nut Wrench, Screw Plates for threading gas pipe. **Send for Illustrated Price Lists and Circular.**

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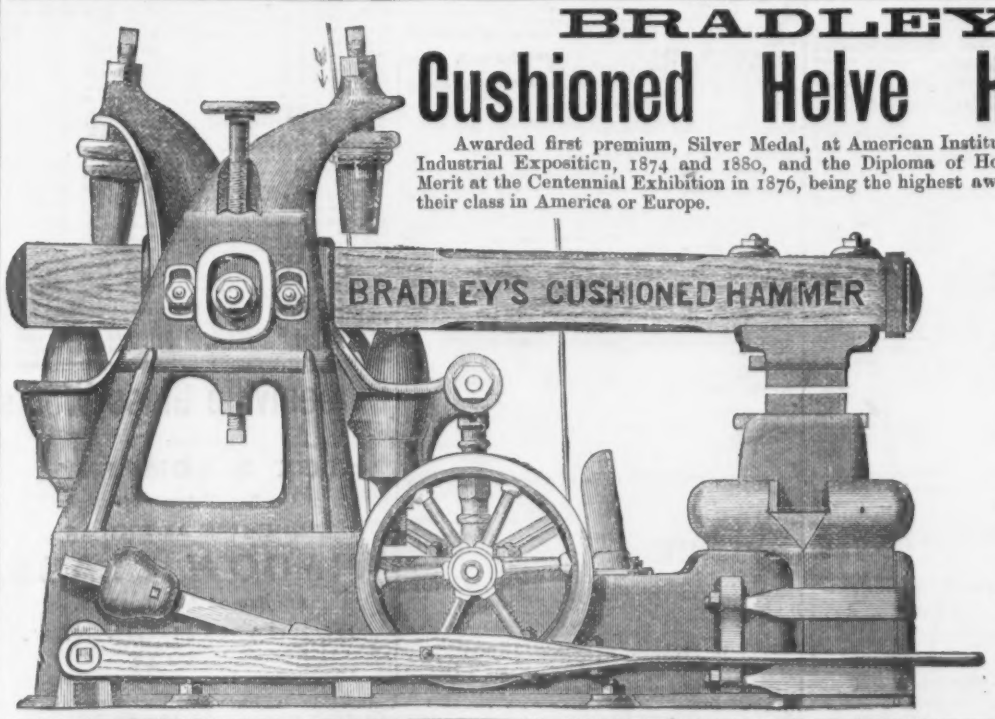

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TAKES LESS POWER,
COSTS LESS FOR REPAIRS,
THAN ANY HAMMER IN THE WORLD.

Guaranteed as Represented.

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Has a Flexible Rubber Cushion or Muffler between the Jaws, which prevents vibration and renders saw filing noiseless.

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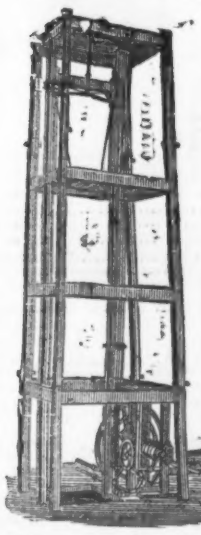
Anvils.—"Eagle American".....₩ lb 9½c. dis 20 %
Apple Parers.
Reading "78".....per doz., $7.40
Reading "76".....per doz., 6.00
Reading "72".....per doz., 5.00
Goodell Turn Table.....per doz., 5.50
Goodell Improved Turn Table.....per doz., 7.50
Goodell Family Corer and Slicer.....per doz., 7.00
Hudson's Improved "80".....per doz., 6.50
Goodell Lightning.....per doz., 6.00
Aiken's Tools......dis 40&10 %
Anvil & Vise.—
No. 1, $6.25; 2, 4.25; 3, 3.50 each.....dis 25 %
Augurs & Bitts.—Snell's Auger.....dis 40 %
L'Hommedieu's Ship Augers.....dis 15 %
Jenning's Bitts.....dis 10&10&10 %
Cook's Bitts.....dis 40&10 %
Sheparuson's Double-Cut Bitts.....dis 45 %
" " Gimlets.....dis 40 %
Stearn's Extension Hollow Augers—
No. 2, ₩ doz, $48.00, No. 3, ₩ doz, $60.00 list, dis 20 %
Bonner's Extension Hollow Augers....₩ doz $36.00
Pierce's Bitts.....dis 33⅓ %
Griswold " .....dis 40 %
Axes.—Blue Jackets.....per doz 9.00
Red Cross.....per doz 8.00
" Handled.....per doz 12.00
Dowse " Boys'.....dis 33⅓ %
Ax Handles.—
Oak Extra, 31 in., No. A.....₩ doz $2.00
" 34 in., No. A.....₩ doz 2.25
" 31 in., No. B.....₩ doz 1.50
" 34 in., No. B.....₩ doz 1.75
" 31 or 34 in., No. C.....₩ doz 1.15
Axle Clips......dis 40 %
Balances.—Chatillon's.....dis 15&10 %
Barn Door Rail.—
Cast Angle (for Anti-Friction Hangers)....per ft. 30
" Half-Round.....per ft, ⅜, 50 ½, 63c
Wrought " .....per ft, ⅜, 40; ½, 50; ¾, 60
Bells.—Connel's Crank Gong reduced list..dis 20&10 %
Bird Cages.
Japanned M. B. & D., reduced list, 1879.....dis 40 %
Brass " " 1876.....dis 33⅓ %
Blind Fasts.—Lock Fasts.....₩ C sets $6.00
No. 6 Fasts.....₩ C sets 6 50
Veazie Fasts.....₩ C sets 6.50
Shedd's.....₩ C sets 7.00
Blind Hinges.—Mall. Hook, 3 holes.....₩ C sets 8.50
Brad Awl Handles.—
Phœnix Adjustable.....₩ doz $2.00
Bolts.—Norway Iron Carriage.....dis 70&5 %
Common " .....dis 80&5 %
Borax.—Refined.....₩ lb 12½c
Boring Machines.
Eagle Upright each, ...$5.50 list } dis 40 %
Eagle Angle each, ...6.75 list }
Snell Augers.....₩ set 2.70
Braces.—Barber's.....dis 40 %
Spofford's.....dis 40 %
Backus'.....dis 50 & 10 %
Bracast Saws.—Holly Scroll Saw.....each, $2 50
Deenan Lathe and Scroll Saw.....6.50
Bracket Saws, extra quality, to No. 8.....₩ gro $6.75
Steel Frame, with patterns.....₩ doz 6.50
Lester.....dis 20 %
New Rogers, all iron.....dis 25 %
Bracket Saw Blades.
Griffith's patent.....₩ gross 750
Brackets.—B. B. & M. Flower Pot reduced list—
.....dis 25&10 %
Bronzed Shelf, B. B. & D. Newlist.....dis 40 %
Store Shelf.....dis 40 %
Bronze Hardware.—
Butts.—Union Fast Joint.....dis 40&10 %
" Loose " .....dis 50&10 %
" Japanned Acorn.....dis 65&10 %
" Silvered " .....dis 55&10 %
" Boston Finish.....dis 75&10 %
Union Spiral Spring.....dis 25&10 %
Wrought Brass.....dis 45 %
Carriage Bolts.—Eagle Norway.....dis 70&5 %
Common .....dis 80&5 %
Carriage Jacks.
"Climax" No. 1.....₩ doz $20.00
" No. 1½....." 14.00
" No. 2....." 13.50
"Universal".....dis 25 %
" No. 1.....each, $2.00
" No. 2....." 3.00
" No. 3....." 5.00
" No. 4....." 6.00
" No. 5....." 6.50
Cartridges.—U. S. Cartridge Co.....dis 60&10 %
Cards.—Watson's makeHorse and Curry ...dis 10 %
" Cotton.....dis 10 %
" Wool.....dis 10 %
Casters.—Bed and Table.....dis 25&10 %
Chain.—Traces 6½, 10, 4, streight.....₩ pair 450
" 6½, 10, 4, twisted.....₩ pair 500
" 7. 12. 2, " .....₩ pair 750
Coil 3-16.....₩ lb 11 c
" ¼.....₩ lb 8½c
" 5 16.....₩ lb 8 c
" ⅜.....₩ lb 7 c
" 7-16.....₩ lb 6½c
" ½.....₩ lb 6½c
Chalk.—White, Carpenter's.....₩ gross 600
Red, Carpenter's.....₩ gross 800
Blue. " .....₩ gross $1.00
Chisels.—Hart. Bliven & Mead, Framingdis 0&r0&10 %
Underhill Framing.....dis 20 %
Buck's Chisels.....dis 30 %
Clothes Line.—
Galvanized Wire, 100 feet each.....₩ doz $4.80
Coat Hooks.—"Dover."—Galvanized, new list..dis 50 %
Japanned, new list.....dis 50 %
Coffee Mills.—New list.....dis 35 %
Copper Rivets......dis 35 %
Cow Ties......dis 33⅓ %
No. 30, 3 ft. No. 6 Wire, with toggle.....₩ doz $3.00
No. 35, 3 ft. " " with snap.....₩ doz 3.80
No. 40, 3½ ft. " " with toggle.....₩ doz 3.90
No. 45, 3½ ft. " " with snap.....₩ doz 4.10
No. 50, 4 ft. No. 4 " with toggle.....₩ doz 4.50
No. 55, 4 ft. " " with snap.....₩ doz 4.75
No. 60, 4½ ft. " 3 " with toggle.....₩ doz 5.50
No. 65, 4½ ft. " 4 " with snap.....₩ doz 5.60

Cocks.—Brass, L. F. & C.....dis 40 %
Cordage.—Manila, usual trade dis 10.....₩ lb 13c
Jute.....₩ lb 9c
Crow-Bars.—Cast Steel.....₩ lb 8c
Iron Steel Pointed.....₩ lb 6½
Cutlery.—Pocket, American Shear Co.'s.....dis 40 %
Butcher Knives, "Woods," Lap Bolster, Square Handle.....30 %
Steak Knives.....dis 10 %
Lap Bolster, Oval Handle.....dis 10 %
Sticking.....dis 20 %
Skinning.....dis 20 %
Butcher, Common Round Handle, "Woods".....dis 20 %
Shoe Knives, "Woods".....dis 10 %
Dividers.—Cook's.....dis 25 %
Dog Collars......dis 30 %
Dog Muzzles.—Automatic.....dis 15
Door Springs.—Torrey's Rod.....₩ doz $2.60
Imitation Torrey's Rod.....₩ doz $1.75
Coil.....dis 10 %
Crown.....₩ doz $1.25
Warners.....₩ doz $2.00
Door Stops.—"Thurston's".....dis 45 %
Drawer Knobs.—"Thurston's".....dis 45 %
Drills.—Morse Bitt Stock.....dis 25 %
Morse Straight Shank.....dis 30 %
Emery.—Wellington Mills.....₩ lb 10c
The Alden Emery Co.....₩ lb 9c
Turkish in 10 lb cans.....₩ lb 8c
Enamelled Ware.
Standard Mfg. Co. Kettles.....dis 40&10 %
" Sauce Pans.....dis 25 %
Felloe Plates.—Wrought.....₩ lb 9c
Files.
American File Co.....dis 30 %
Nicholson " .....dis 30 %
Fluting Machines.
Knox list, $1.00.....dis 10 %
American list, $3.40.....dis 10 %
Forks. W. C. & Co., Manure.....dis 40 %
Gimlet Bits.
Genuine German, No. 125, 1-32 to 8-32, per doz $1.00
Pierce's.....per doz 65c
Glass Cutters.
Combination Class Cutter and Knife Sharpener.....₩ doz $1.0
Grub Hoes.—K. P. & Co.'s No. 2, 11.50 ₩ doz..dis 30 %
Hammers.—Maydole's.....dis 10 %
Hammond's.....(new list.).....dis 20 %
Hangers & Rollers.—Anti-Friction.....dis 50&10 %
Acme Rollers.....dis 50 %
Climax.....dis 50 %
Common Hangers.....dis 30&10 %
" Rollers.....dis 35&10 %
Hand Screws......dis 10 %
Hatchets.—C. F. Dowse new list.....dis 33⅓ %
Underhill.....dis 25 %
Hay Knives.—Lightning.....₩ doz $18.00 net
Fisher's Patent.....₩ doz @14.00
Hinges.—Strap and T (new list).....dis 50&10 %
Providence Plate.....₩ lb 60
Wrought Screw Hook.....₩ lb 60
Hoes.—W. C. & Co.'s.....dis 40
Hooks and Staples.—Brewers'.....dis 40 %
Horse Nails. No. 0 7 8 9
National Finished.....25 .21 .20 .19....dis 30 %
Putnam Pointed.....26 .24 .23 .22.....10 %
Horse Nails.—Bridgewater.....dis 25 %
No. 6 21; No. 7, 21, No. 8, 20; No. 9, 19.
Ice Cream Freezers.—"Packer's".....dis 40 %
Knobs.—"Norwalk." New list.....dis 45 %
Silver Glass.....dis 50&10 %
" Bell Pulls.....dis 50&10 %
Lanterns.—Guarded No. 99.....₩ doz 7.50
Tubulars, No. 9.....₩ doz 8.00
Railroad, Oil, No. 43.....₩ doz 9.00
Triangular.....₩ doz 4.00
Hurricane.....dis 20 %
Lead.—Sheet.....₩ lb 7 c
Pipe.....₩ lb 6½c
Locks.—Norwalk Genuine Bronze Goods.....dis 45 %
Eagle Cabinet.....dis 10 %
" Trunk.....list net
W. Wilcox & Co., Padlocks.....dis 40 %
American Lock Co.'s Steel Key.....dis 33⅓ %
Manure Forks.—W. C. & Co.....dis 40 %
Mattocks.—K. P. & Co., Long Cutter, 13.00 ₩ doz.
.....dis 30 %
K. P. & Co., Short Cutter, 15.00 ₩ doz.....dis 30 %
" Pick " 16.00 ₩ doz.....dis 30 %
Measuring Tapes.—Eddy's.....dis 20 %
Meat Cutters.—Miles' Challenge.....dis 30 %
Hale's, (New list).....dis 40 %
American.....dis 20 %
Money Drawers.—Tucker's Alarm.....₩ doz $22.50
Mouse Traps.—Delusion.....₩ doz 2.00
Novelty.....₩ doz 1.75
Nails......₩ keg, 3.15 rates
Oilers.—Zinc and Tin.....dis 45 %
Brass and Copper.....dis 33⅓ %
Ox Bows.—Extra finished and varnished.....list net
1¼ in., ₩ doz. pair..$5.75 | 2 in., ₩ doz. pair....$9.00
1¾ in., " " 8.00 | 2½ " " 11.00
Padlocks.—W. Wilcox & Co.'s.....dis 40 %
Paper.—Tarred Sheathing.....₩ lb 2½c
Dry Sheathing.....₩ lb 2½c
Picks.—K. P. & Co., Adze Eye, 5 to 6 lb 12.00....dis 30 %
" " 6 to 7 lb 13.00....dis 30 %
Planes.—Greenfield Tool Co.....dis 25 %
N. Y. Tool Co.....dis 30 %
English Iron.....dis 20 %
Bailey's.....dis 20&10 %
Plated Ware.—Rogers & Bro.....dis 33⅓&5 %
Pliers.—Vom Cleff & Co.'s.....net list
Button's Wire Pliers.....dis 33⅓ %
Plumb & Levels.—Stanley, R. & L. Co..dis 60&10 %
Pocket Knives.
American Shear Co.'s.....dis 33⅓&10 %
Potato Diggers.—W. C. & Co. reduced list...dis 40 %
Pulleys.
Acme or Excelsior, 1¾ in.....per doz 230
" " 2 in. " 260
Pulley Blocks.....dis 40 %
Pumps.—Union Manufacturing Co.
Iron Cistern.....dis 50 %
" Pitcher Spout.....dis 50 %
Copper.....dis 30 %
Rivets.—Black.....dis 50 %
Carriage in 10 lb papers.....dis 30 %
Copper.....dis 35 %
Razors.—Torrey's.....dis 10 %
Razor Strops.—Torrey's.....Full line.
Rules.—Stanley.....Boxwood, dis 60&10 %
" Ivory, dis 50&10 %
Sadirons.—Common.....₩ lb 3½c
Laundry.....₩ lb 6½c
Tailor's Geese.....₩ lb 9c
Enterprise, "Potts".....dis 30 %
Sash Locks.—King & Hutchinson's, new list..dis 40 %
Sandpaper.—Baeder & Adamson.....dis 25 %
M. B. & D.....dis 25&5 %
Sash Weights.—Patent Eye.....₩ lb 1½c
Saws.—Hand Saws, Disston's.....dis 20 %
Wheeler & Clemson.....dis 20 %
Cross-Cut Saws.
W. M. & C., Common Tooth, No. 1.....₩ foot 35c
" " Champion " .....₩ foot 35c
Disston's, Common " .....₩ foot 40c
" Gt. American " .....₩ foot 40c
Boynton's Lightning " .....₩ foot 45c
M. B. & D., Hand Saws.....dis 25 %
W. M. & Co.'s Circular Saws.....dis 35 %
Richardson Bros.....dis 25 %
Saw Blades.—Disston.....dis 25 %
W. M. & C.....dis 12 %
Welch & Griffith, Extra.....₩ doz $8.40
" " No. 2.....₩ doz 7.00
Scales.—Fairbanks.....dis 20 %
Screws.—Aiken's Flat-Head Iron.....dis 45 %
American Flat-Head Iron.....dis 45 %
" " Brass.....dis 45 %
" Round-Head " .....dis 30 %
" " Iron " .....dis 40 %
Grilley " Nickel-plated Common..dis 40%
Scythes.—Clippers, in boxes.....₩ doz $9.00
Shaves.—Kimball's.....₩ inch 7½c
Watrous.....dis 15 %
Shears.—American Shear Co., new list.....dis 70 %
Shot.—Tatham's.....₩ lb 7½c
Shovels.—O. Ames, new list.....dis 10 %
O. Ames, other brands, new list.....dis 10 %
M. B. & D.....dis 10 %
Oxford Birmingham Pattern.....dis 45 %
Sinks.—Morse Patent.....dis 30 %
Snow Shovels.—Malleable tips.....
Skates.—Union.....dis 25 %
Acme.....dis 20 %
Stock and Dies.—King's.....dis 10&5 %
Tacks.—A. Field & Son's.....dis 20&10 %
Pittsfield.....dis 20&10 %
Swedes Tinned.....35&10 %
Swedes Iron.....20&10 %
Gimp and Lace.....20&10 %
Copper Tacks.....25&10 %
All balances on list.....15&10 %
Traps.—Oneida, Genuine.....dis 33⅓ %
Oneida, Imitation, H. & N.....dis 50 %
Blake's.....dis 40 & 10 %
Vises.—Sumpson's Adjustable.....dis 25&5 %
Howard Vise Co.....dis 25 %
Prentiss'.....dis 20 %
Weather Strips.—Packer's.....₩ doz $4.50
Browne's Flexible Rubber.....dis 30 %
In 25 feet boxes; No. 1, ½ in. wide, ₩ yard 10c. No. 2, ⅝ in., 15c. No. 3, ¾ in., 20c.; No. 4, 1 in., 25c
Black Walnut Spring Weather Strips....₩ doz. $3.50
Window Springs......dis 20 %
Babcock's No. 2.....₩ gross $ 6.25
" " 4.....₩ gross 4.50
Wire Cloth.—"Clinton".....₩ ft. 3½c
Wire Fence.
Scutt's Patent, Painted.....₩ lb 7½c
" Galvanized.....₩ lb 8½c
Wire Goods.—Gate Hooks and Eyes, &c. new list.....dis 60&10 %
Wrenches.—A. G. Coe's.....
Girard Mfg. Co.....dis 50&10 %
Girard Agl.....dis 60 %
Wringers.—Universal No. .....₩ doz $65.00
Universal, No. 2½.....₩ doz 60.00
Novelty, No. 10.....₩ doz 60.00
" No. 2.....₩ doz 65.00
" No. 22.....₩ doz 67.50
Excelsior, No. A.....₩ doz 70.00
" No. B.....₩ doz 80.00
" No. CC.....₩ doz 100.00
Novelty Set Tub, E.....₩ doz 6.00
Eureka.....₩ doz 6.00
Keystone, Wood Frame No. 1½.....₩ doz 5.00
" " Iron Frame No. 2½.....₩ doz 7.00
Zinc......₩ lb 7½c
Withington, Cooley & Co.—Rose, Blake, Forks 40 dis 40 %. Special rate for Export.



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No. 3	"	"	"	½ to 2
No. 4	"	"	"	1½ to 3
No. 5	"	"	"	2½ to 4
Size A	threads bolts			¼ to ¾
Size B	"	"		¼ to 1

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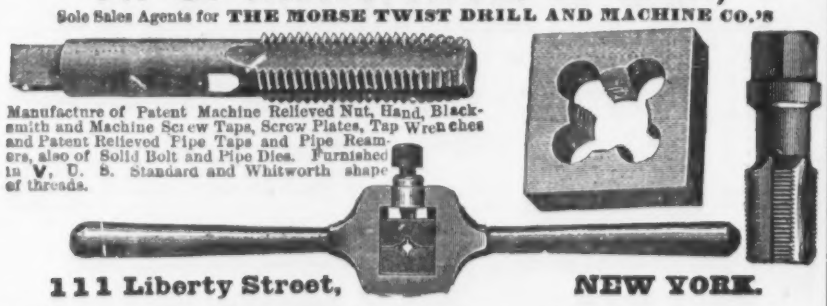

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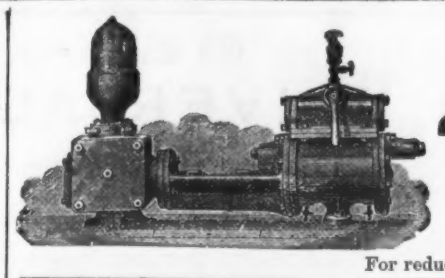

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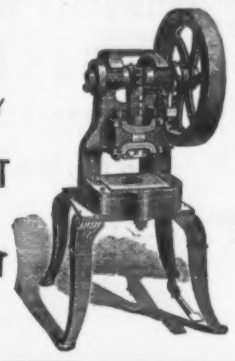

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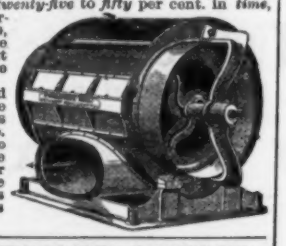

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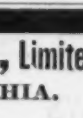

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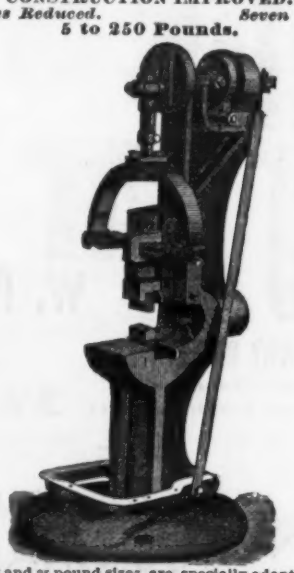

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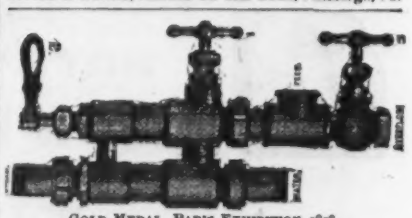

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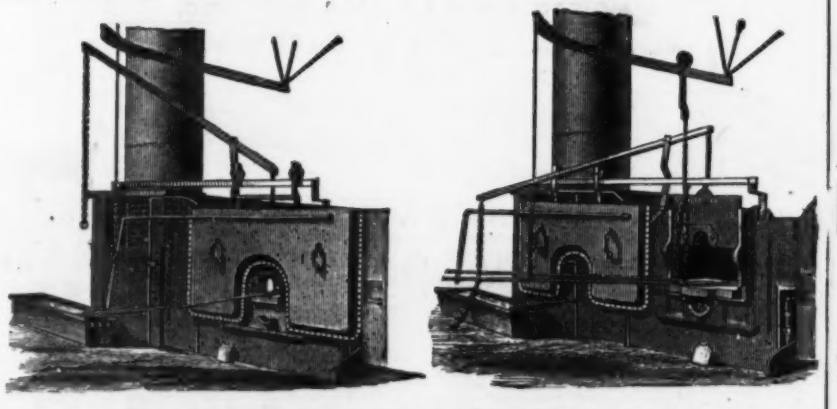

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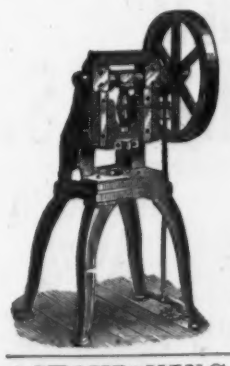

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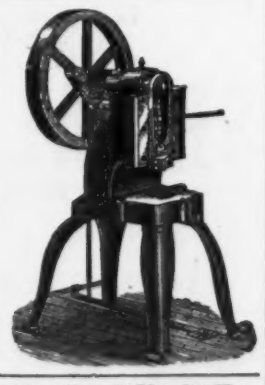

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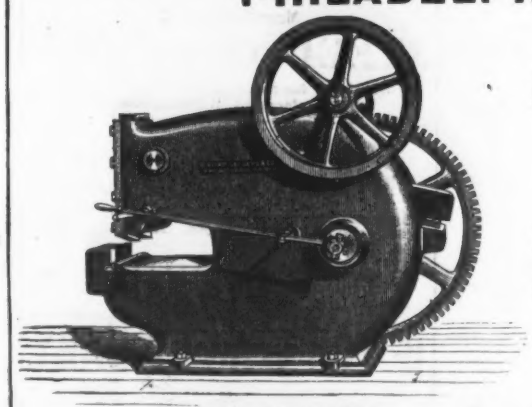

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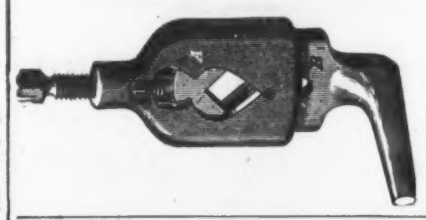

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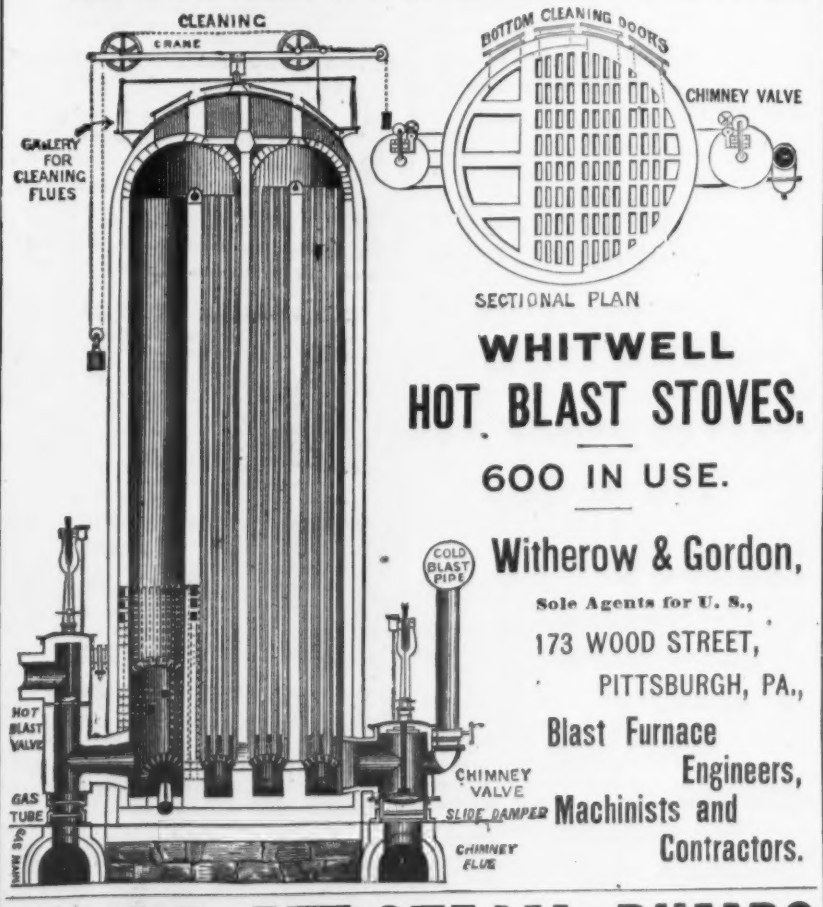

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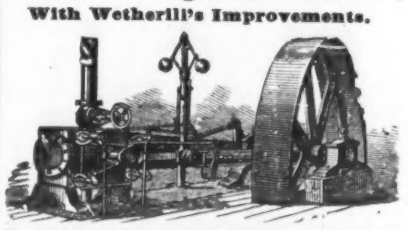

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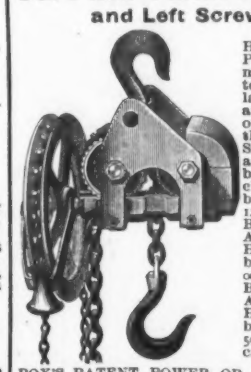

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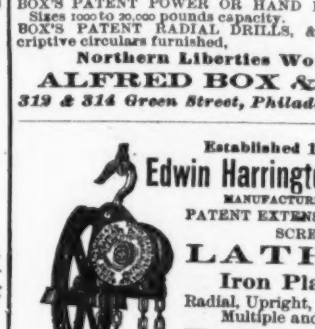

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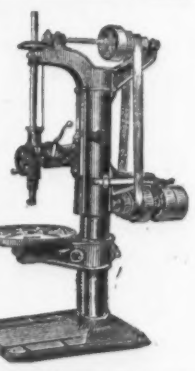

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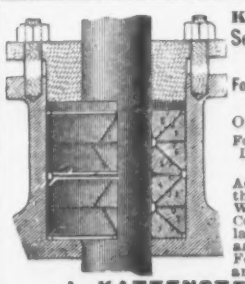

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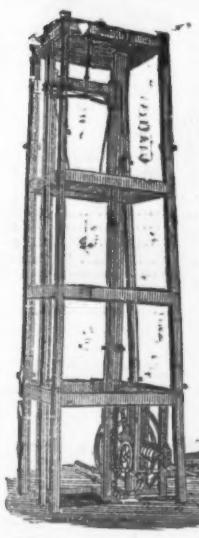

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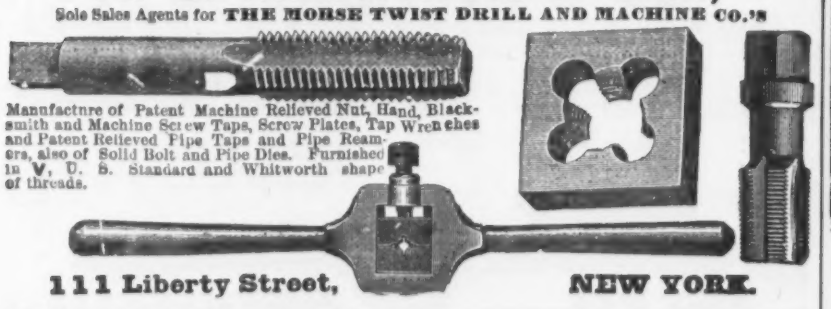

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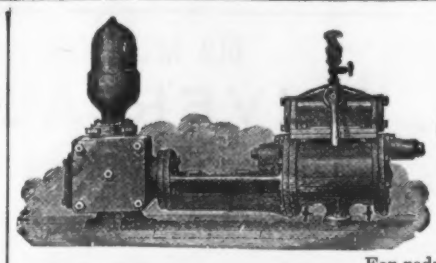

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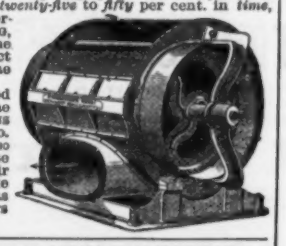

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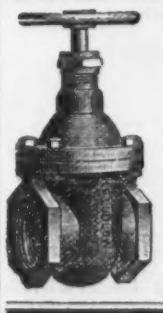

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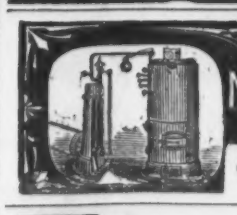

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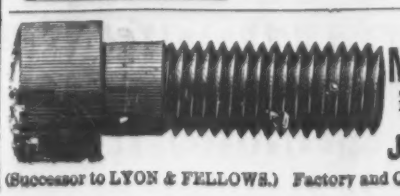

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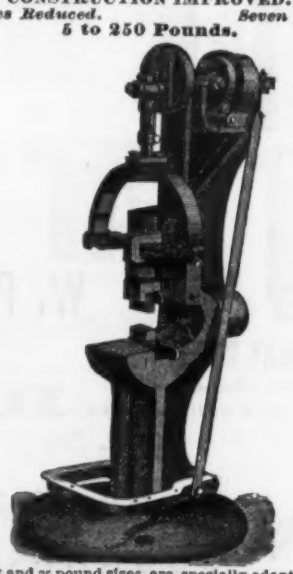

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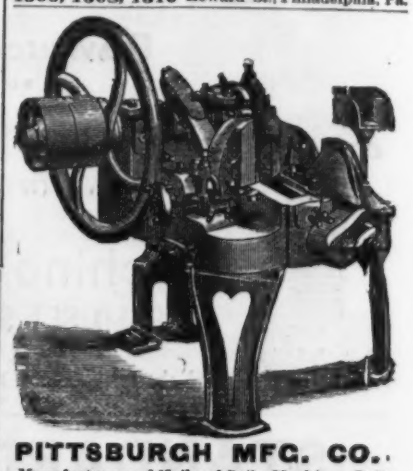

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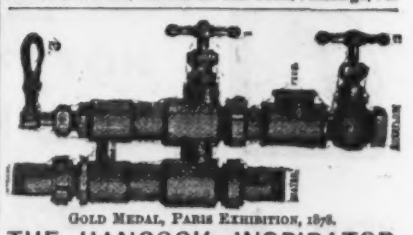

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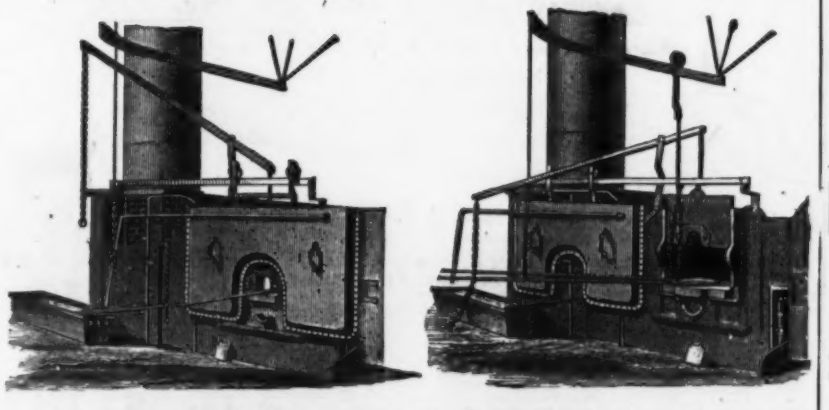

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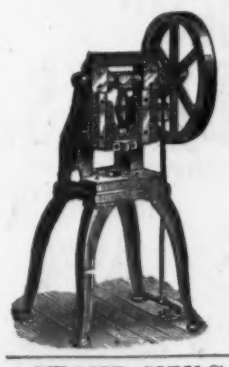

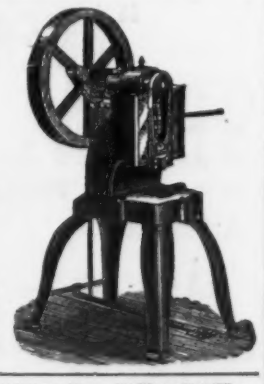

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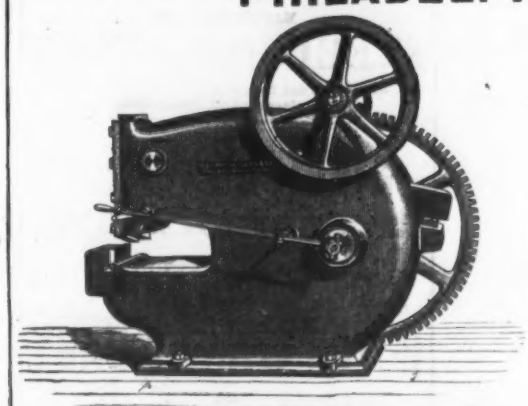

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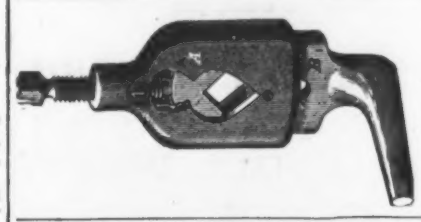

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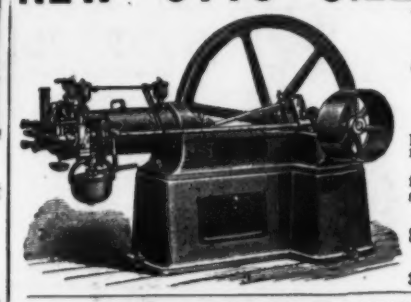

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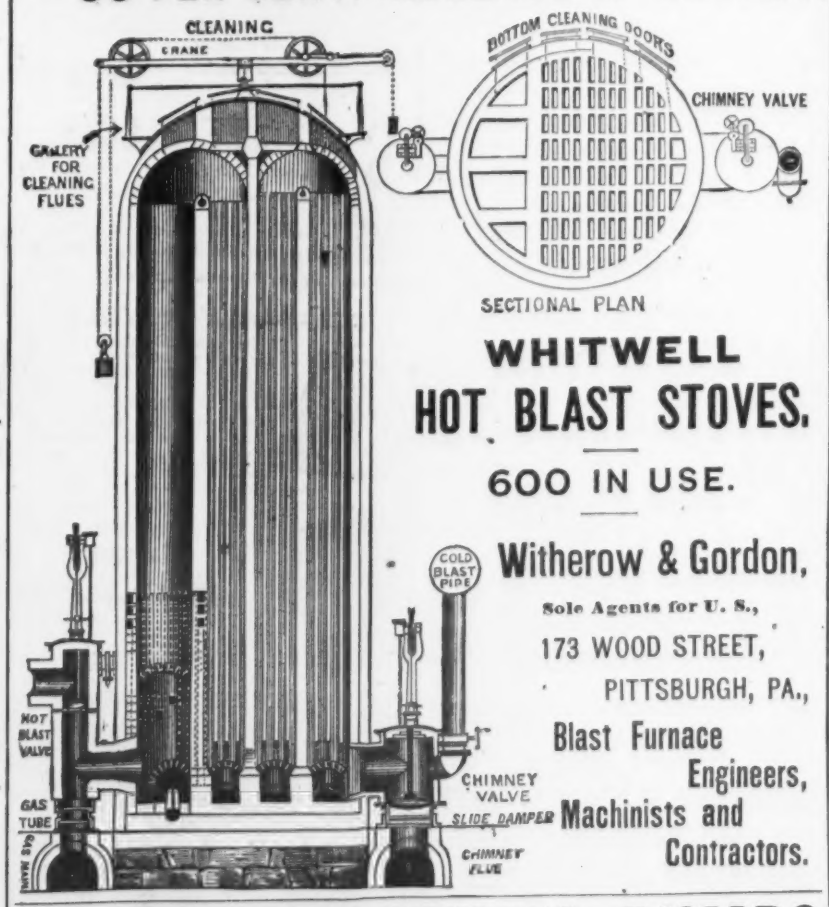

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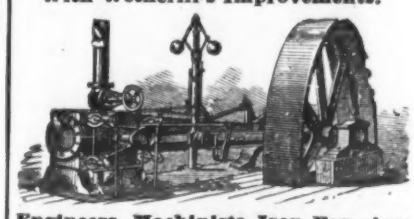

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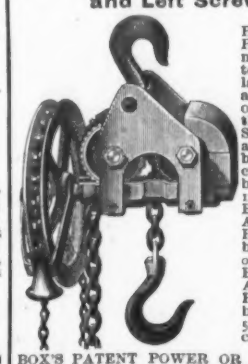

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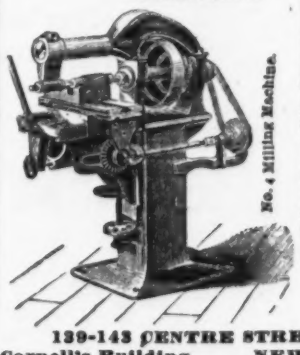

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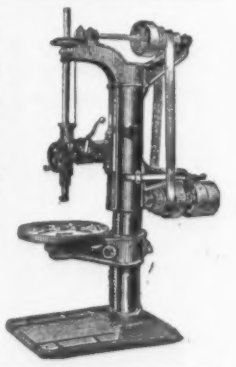

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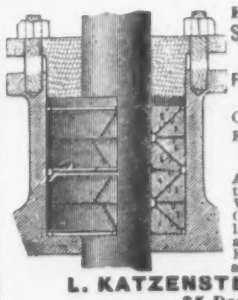

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